GOLD COAST COLONY.

REPORT

ON THE

Medical Department

FOR THE YEAR

1933-34.

GOLD COAST:

Printed by the Government Printer at the Government Printing Office, Accra.
To be purchased from the Government Printing Office (Publications Branch), Accra, Gold Coast Colony, and from the Crown Agents for the Colonies, 4 Millbank, London, S.W.1.

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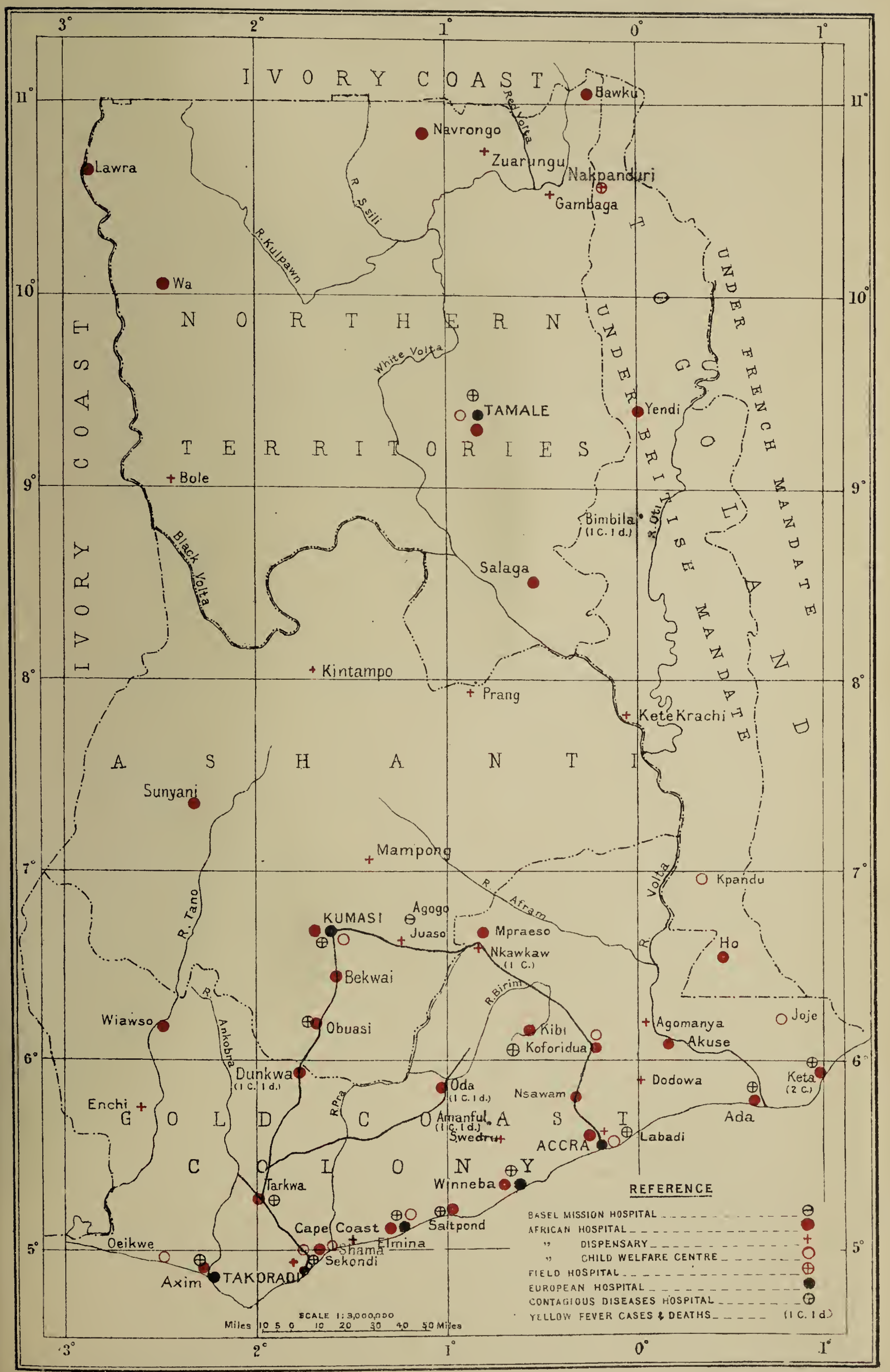
THE GOLD COAST MEDICAL FACILITIES MAP.



SURVEY H.Q. ACCRA, 1934.

No. 1034/152/33/263.

MEDICAL DEPARTMENT
P.O. BOX 138,
VICTORIABORG, ACCRA.
31*st July*, 1934.

ANNUAL MEDICAL AND HEALTH REPORT, 1933–1934.

SIR,

I have the honour to submit for the information of His Excellency the Governor and for transmission to the Right Honourable the Secretary of State the Medical and Health Report of the Gold Coast Colony for the year 1933–34.

I have the honour to be,

SIR,

Your obedient Servant,

P. S. SELWYN-CLARKE
Acting Director, Medical and Sanitary Service.

THE HONOURABLE
THE ACTING COLONIAL SECRETARY,
VICTORIABORG, ACCRA.

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Annual Medical and Health Report for the Year 1933-34.

I.—ADMINISTRATION. MEDICAL, HEALTH AND LABORATORY BRANCHES.

(*a*) MEDICAL BRANCH.

European Staff.

Promotions :—

Dr. P. S. Selwyn-Clarke, Deputy Director of Health Service; Miss D. J. Taylor, Senior Nursing Sister.

Appointments :—

Dr. K. K. Grieve, Deputy Director of Medical Service; Dr. G. H. Gallagher, Assistant Director of Medical Service; Dr. A. M. Wilson Rae, Senior Medical Officer; Dr. E. G. A. Don, Senior Medical Officer; Dr. T. W. Stephens, Medical Officer; Mr. F. R. Johnson, Analytical Chemist; Miss D. C. H. Howard, Nursing Sister; Miss W. C. S. Matthews, Nursing Sister; Miss E. M. Barnes, Nursing Sister; Miss A. M. Loudon, Nursing Sister; Miss A. C. Belton, Nursing Sister; Miss Margaret Gray, Nursing Sister.

Transfers :—

Dr. P. D. Oakley, Deputy Director of Medical Service, to Sierra Leone as Director of Medical and Sanitary Service; Dr. J. R. Forde, Senior Medical Officer, to Gambia; Dr. P. B. Wilkinson, Medical Officer, to St. Helena; Miss M. K. Parr, Nursing Sister, to Gambia as Senior Nursing Sister; Dr. R. D. Reid, Medical Officer, to Medical Research Institute as Pathologist.

Retirements :—

Dr. Reginald Mugliston, Senior Medical Officer; Dr. Michael MacSweeney, Medical Officer; Miss G. M. Murphy, Senior Nursing Sister; Miss N. M. Hilliard, Nursing Sister; Miss S. E. Audric, Nursing Sister; Miss Irene J. Innes, Nursing Sister.

African Staff.

Promotions :—

Second Division Nurses :—Twenty.

Second Division Dispenser :—One.

Appointments :—

Second Division Clerks :—Two.

Second Division Dispenser :—One (re-appointment).

Second Division Nurse :—One (re-appointment).

Mental Nurses :—Two.

Nurses-in-training :—eighteen (two re-appointments).

Dispenser-in-training :—One.

Midwives-in-training :—Two.

Retirements :—

Second Division Clerks :—Two.

Second Division Dispenser :—One (dismissal).

Dispenser-in-training :—One.

Second Division Nurses :—Nine (one death).

Nurses-in-training :—Twelve (one death).

Midwives-in-training :—Two.

Mental Nurses :—Two.

Transfers :—

One Midwife-in-Training transferred to Health Branch as Midwife.

(*b*) HEALTH BRANCH.

European Staff.

Appointments :—

Mr. J. O. Drinkald, Sanitary Superintendent; Mr. R. B. Fyfe, Sanitary Superintendent.

Other changes in the Staff :—

Dr. M. K. Lawlor, transferred to Medical Branch.

Dr. J. G. E. F. Cummins, transferred to Health Branch.

Mr. J. Harper, Sanitary Superintendent, retired.

Mr. R. H. Thomas, Sanitary Superintendent, retired.

Mr. L. G. Eddey, Sanitary Superintendent, resigned.

Mr. W. J. Cooke, Sanitary Superintendent, retired.

African Staff.

Appointments :—

Four Sanitary Inspectors-in-Training.

One Market Clerk.

Four Village Overseers.

Three Nurses-in-Training.

Two Midwives.

Promotion :—

Mr. J. S. Abbey, Senior Division Sanitary Inspector.

Other changes in the staff :—

Mr. A. Q. Thompson, Senior Division Sanitary Inspector, retired.

(*c*) LABORATORY BRANCH.

Promotion :—

Dr. G. Robinson, Senior Pathologist.

Re-appointment :—

Dr. R. D. Reid, Pathologist.

(b) Ordinances Affecting Public Health.

1. No important ordinances concerning public health were passed during the year but a few orders and regulations of health import are given below :—

(*a*) Orders in Council applying the provisions of the Mosquitos Ordinance to Munianu, Abasa, Nfuom, Bebianiha Kakraba and all areas declared as Mining Health Areas.

(*b*) Orders in Council under the Towns Ordinance applying its provisions to Bogosu and Aboso (Railway Station area), and defining the boundaries of Big Ada, Saltpond, Pakro, Moree, Komenda, Vodza and Beraku. The town boundaries of Tamale were amended by Rule No. 2 of 1934.

(*c*) Bye-laws were made controlling the removal of night-soil at Cape Coast and Kumasi.

(*d*) Order No. 1 of 1934 declared Ho (Togoland) infected with smallpox.

(*e*) The provisions of the Births, Deaths and Burials Ordinance were applied to Big Ada in the Eastern Province of the Colony.

(*f*) Regulations were made controlling the markets of Essikadu, Keta and Nsawam.

(*g*) Order No. 3 of 1934, under the Vaccination Ordinance, made vaccination compulsory within the Northern Territories of the Gold Coast and Northern Section of Togoland under British Mandate.

(c) Finance.

2. The total revenue earned by the Medical Department (all branches) during the financial year 1933-34 amounted to £34,319 as compared with £39,068 in 1932-33.

3. The total ordinary (i.e. recurrent) expenditure for the Colony was £2,302,061.

4. The total ordinary (i.e. recurrent) expenditure for medical services (all branches) was £278,124 as compared with £285,110 in 1932-33. This figure is exclusive of the cost of buildings, e.g. hospitals, dispensaries, etc., and other public health works such as water supplies, town improvements, etc.

5. The ratio of the ordinary expenditure on medical services to the total expenditure of the Colony was 12.1 per centum as compared with a ratio of 10.8 per centum last year.

6. A detailed financial statement for the year appears as Table B of the returns.

7. The following table shows the ordinary (recurrent) expenditure under the Heads Medical, Health and Research over five years, as compared with the total ordinary (recurrent) expenditure for the Colony :—

TABLE I.

Branch.	1929–30 (Actual).	1930–31 (Actual).	1931–32 (Actual).	1932–33 (Actual).	1933–34 (Actual).	1934–35. (Estimated).
	£	£	£	£	£	£
Medical	190,083	195,450	166,572	155,248	155,199	162,668
Health	151,123	154,986	139,083	121,714	116,484	120,750
Research	17,088	18,647	14,489	8,148	6,441	6,980
Total	358,294	369,083	320,144	285,110	278,124	290,398
Total Colony	2,692,012	2,872,385	2,700,469	2,647,486	2,302,061	2,463,309
Percentage of total to Colony total	13.3%	12.8%	11.9%	10.8%	12.1%	11.8%

II.—PUBLIC HEALTH.

(*a*) General Remarks.

(I) HISTORICAL SURVEY, 1913-33.

8. This year it might be of interest to look back, not to the commencement of medical work in the Gold Coast, nor to 1902 when the West African Medical Staff first came into being but to comparatively recent times, namely, to 1913 and the years following.

9. In 1913 the average birth-rate for the registration districts in the Colony was 10.6 per thousand living persons. This figure was more than doubled in 1923-24 when the rate had increased to 21.9. In 1933 it amounted to 34. Better registration accounts for much of this increase, but the reduction in the loss of fœtal life from malaria and other infections owing to improved hygienic conditions no doubt constitutes a not unimportant factor.

10. In 1913 the average death-rate per thousand of the population living in the registration districts in the Colony amounted to 26.7, falling to 24.5 in 1923-24 and to 22.2 in 1933.

A more startling saving of life is apparent in the case of babies and infants under one year of age. In 1913 more than one infant in every three born died before attaining one year of age—the actual figure was 395 deaths under one year per thousand live babies born. By 1923-34 the loss of life was reduced by more than half—179—and in 1933 the infant mortality rate was only 100. To put it another way, nearly three hundred lives of babies are now saved from a premature grave for every thousand babies born.

11. This may be attributed partly to improved birth registration, but it is equally due not only to a far greater appreciation of western medicine and to actual cures but also to the improved environmental conditions. This is certainly an example of the real value of co-operation between the officers of the hospitals (or curative branch) and the health officers responsible for the preventive side.

12. Again, the invaliding and death-rates amongst the non-native officials have fallen from 42.1 and 12.2 in 1913 and 19.4 and 16.3 respectively in 1923 to 17.7 and 5.9 in 1933. In other words, in the short space of 20 years the invaliding and death-rates amongst this class of the community have been halved.

13. It is interesting to note, further, that the total number of cases treated in Government hospitals and dispensaries has risen from 49,491 in 1913 to 77,492 in 1923-24 and 250,827 in 1933-34. During the same period the number of qualified medical officers of all grades and in both hospitals and health branches has varied very little ; the relevant figures being 66, 57 and 69 for the years 1913, 1923-24 and 1933-34 respectively.

14. It is evident, therefore, that whilst the number of patients treated has more than trebled during the past two decades, the total number of medical officers of all grades has remained practically stationary.

15. The explanation is not far to seek. With the spread of education there is a far greater appreciation of western medicine, more especially in view of the " miraculous " cures effected with injections of organic arsenic and bismuth preparations ; secondly, medical officers are much more mobile as the result of the outstanding improvement in roads and means of transport ; and, thirdly, arising out of the first two factors, medical officers have willingly undertaken far greater burdens and are deserving of no little credit in consequence.

16. It must be remembered, moreover, that, since its inception in 1921, there has been an almost phenomenal development in welfare services in the Gold Coast, not only as the result of able efforts of medical officers attached to welfare centres but also because of the admirable work of voluntary helpers attached to the League for Maternal and Child Welfare, a section of the Gold Coast Branch of the British Red Cross Society.

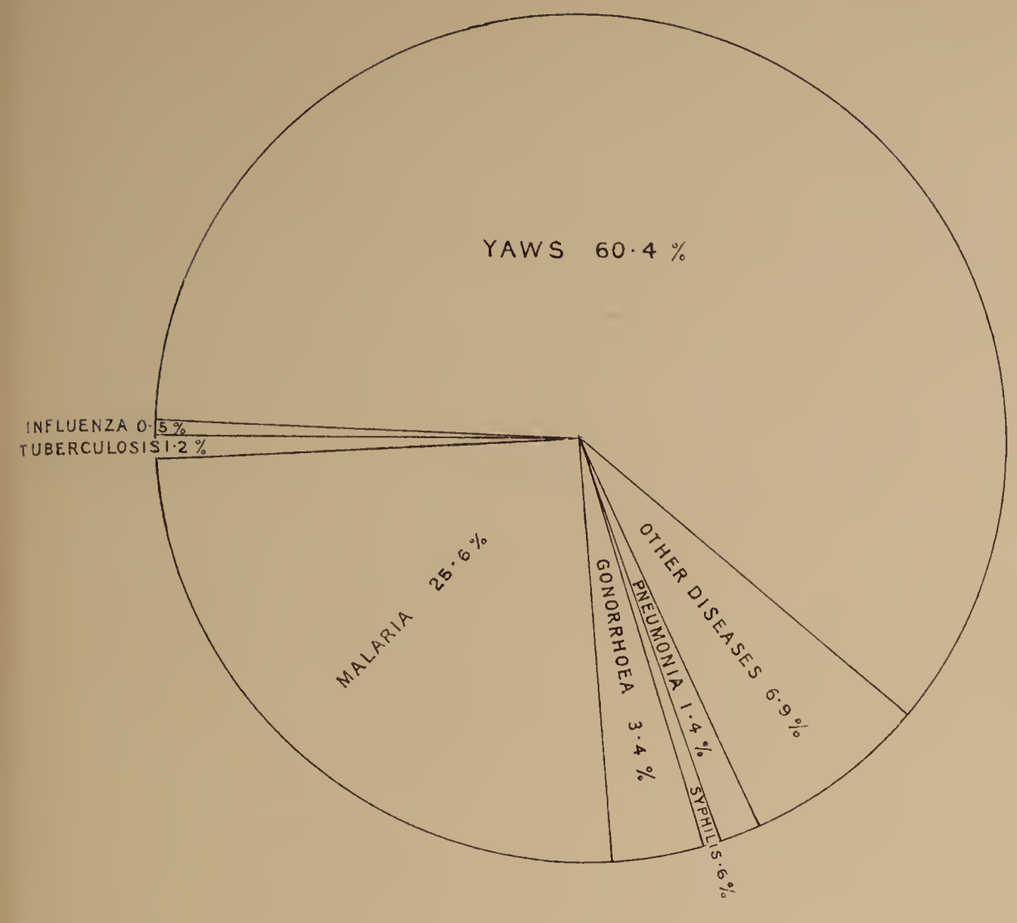
17. In 1913 there were nine European nursing sisters of all grades. This figure was doubled in 1923-24 and the number now stands at thirty-one.

18. The improvement in hospital standards, training of the African subordinate staff, nursing and dieting of patients, and cleanliness and orderliness of buildings and equipment can readily be surmised.

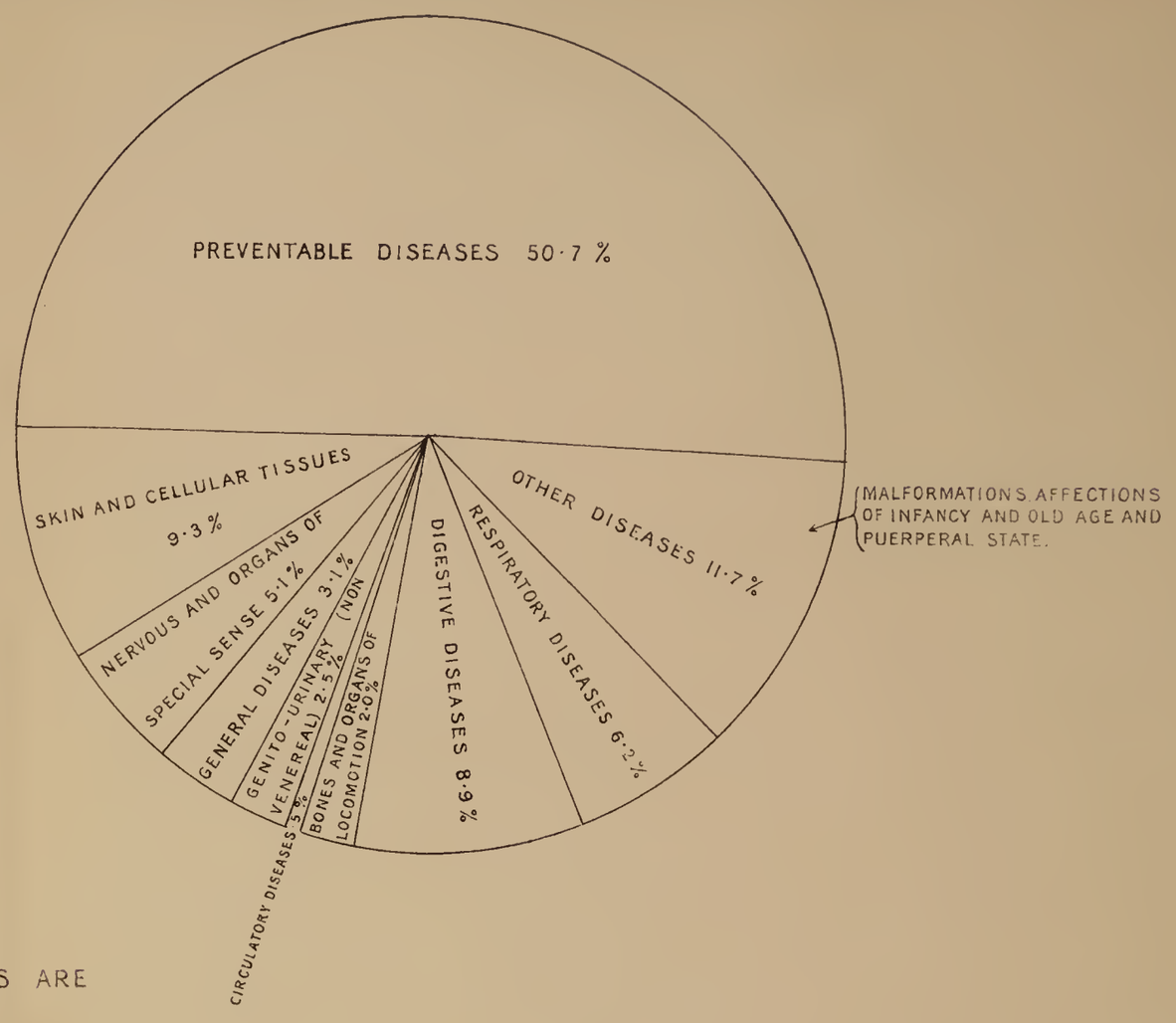
19. The expenditure on the medical services of the Colony which, however, does not include the capital and maintenance costs of hospitals, dispensaries, welfare centres, sanitary structures, water supplies, etc., has risen from £93,560 in 1913 to £221,586 in 1923-24 and £278,124 in 1933-34.

During the same period the ratio of public funds devoted to medical services to the total colonial expenditure has increased from 6.9 in 1913 to 12.1 in 1933-34.

INFECTIVE DISEASES TOTAL INCIDENCE 100,056.

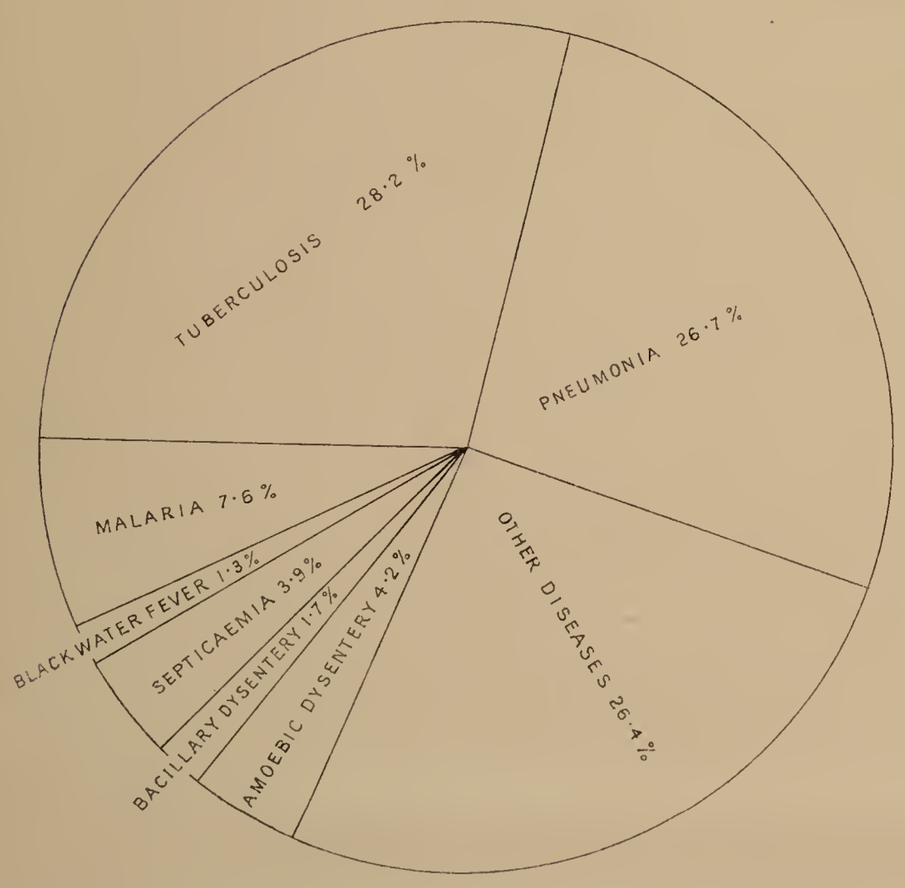


GENERAL SYSTEMIC AND PREVENTABLE DISEASES TOTAL INCIDENCE 250,827.

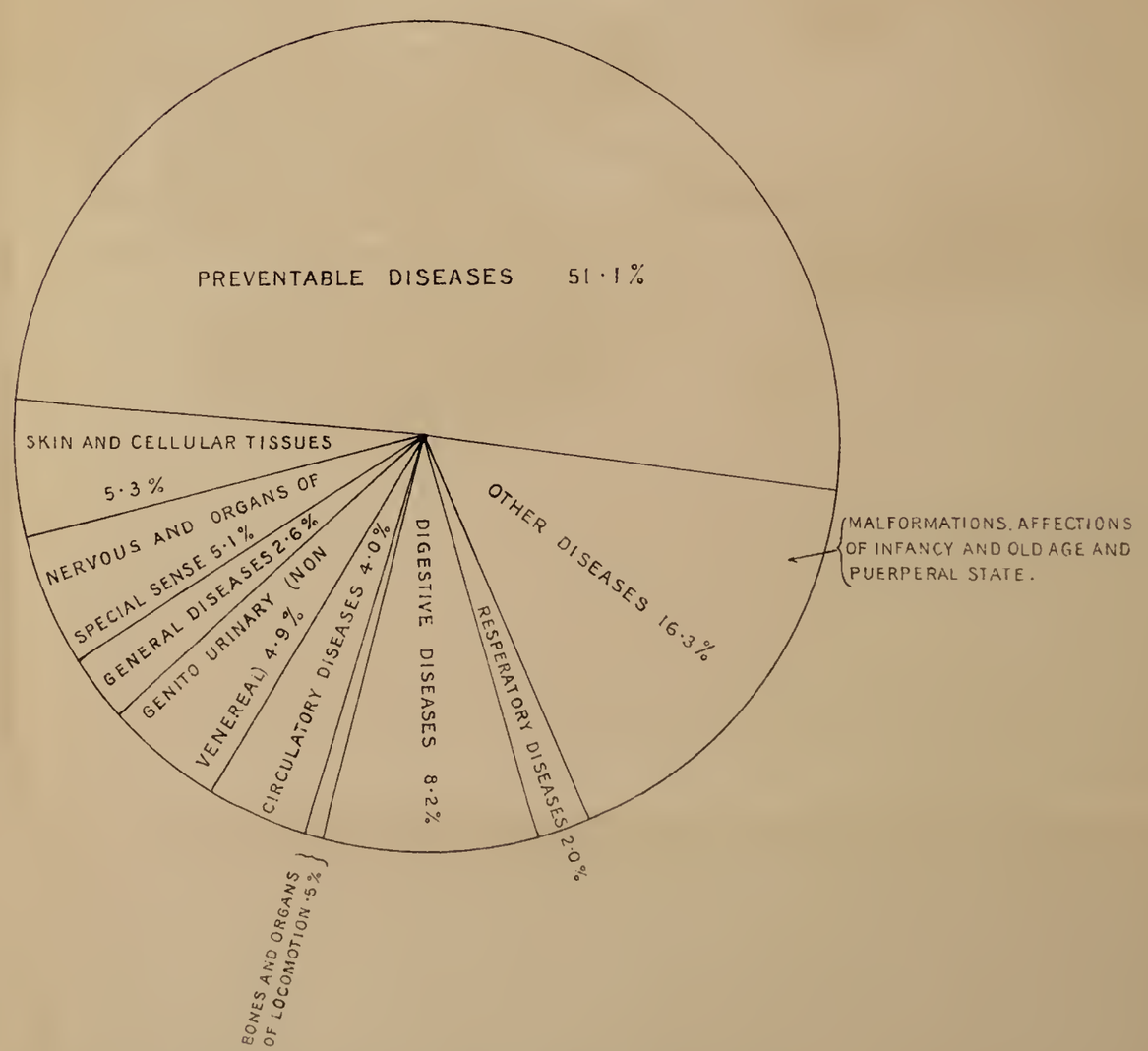


PREVENTABLE DISEASES ARE

(1) INFECTIOUS DISEASES
(2) INTOXICATION AND POISONS
(3) SCABIES AND TINEAE
(4) HELMINTHS
(5) AFFECTIONS PRODUCED BY EXTERNAL CAUSES.



TOTAL DEATHS = 647 = ·65 % OF TOTAL INCIDENCE.



TOTAL DEATHS = 1634 = ·65% OF TOTAL INCIDENCE.

SURVEY H.Q. ACCRA. 1934.

20. Outstanding events affecting the health and well-being of the people of this Colony during the past 20 years are briefly outlined below :—

1913.

Development of new Mangoasi township—then terminus of Accra-Akwapim Railway.

Yellow fever, twenty cases.

1914.

Accra, pipe-borne, filtered, water supply (commenced 1909).

Obuasi, pipe-borne, untreated, water supply.

Reservation areas for non-natives established at Accra, Cape Coast, etc.

Yellow fever, nineteen cases.

1915.

Quarantine Ordinance to prevent introduction of plague, etc., through ports.

New African hospitals opened at Kumasi and Saltpond with dispensary at Koforidua, then rail-head.

Accra Rest House served as European hospital.

Fall of 67 per centum in cases of guinea-worm at Accra following institution of of pipe-borne water.

Yellow fever, two cases.

1916.

Tafo township laid out, new rail-head .

New European hospital opened at Accra and dispensary at Mpraeso.

Reservation areas for non-natives formed at Koforidua, Nsawam, etc.

Tuberculosis reported on increase.

Yellow fever, six cases.

1917.

Sekondi, pipe-borne water supply.

Committee appointed to investigate causes of high infant mortality in Accra (383 deaths per 1,000 births).

Cape Coast, new hospital for women.

Plague, six cases.

Smallpox in Ashanti and Northern Territories—358 cases with 17 per centum deaths.

Yellow fever, five cases.

1918.

Pandemic of influenza starting September—increase of nearly 2,000 deaths in registration areas alone.

Smallpox in Ashanti and Northern Territories.

Yellow fever, four cases.

1919.

Epidemic cerebro-spinal fever in Northern Territories—1,041 cases and 986 deaths seen.

Plague, one case in Accra District.

Yellow fever, ten cases.

1920.

Vaccination Ordinance to secure compulsory vaccination.

221,386 vaccinations performed.

Smallpox, 263 cases with 26 per centum deaths in Accra District.

Epidemic cerebro-spinal fever in Northern Territories—over 3,000 cases reported.

Yellow fever, three cases.

1921.

Accra Town Council inaugurated welfare work with two health visitors.

Leper settlement commenced at Contagious Diseases Hospital, Accra.

Yellow fever, four cases.

1922–23.

Accommodation for isolation of "open" cases of pulmonary tuberculosis provided at Contagious Diseases Hospital, Accra.

Relapsing fever first recognized in Gold Coast and vector proved to be body louse.

Yellow fever, twenty-three cases.

1923-24.

Gold Coast Hospital, Accra, opened 9th October, 1923.

Winneba, chlorinated, pipe-borne water supply.

School medical officer—appointed as Radiologist—commenced work in Accra schools.

Sekondi and Nsuta, outbreak of plague. Accra, 158 cases of relapsing fever almost all Zabrama immigrants.

Yellow fever, thirteen cases.

1924-25.

Professor Sir William Simpson reported on mortality in mine labourers.

Welfare centres established in Christiansborg (June 1924) and James Town, Accra, (Jan. 1925).

New Zongo built at Kumasi to replace that destroyed by the plague.

Plague (spread from Sekondi), 273 cases with 89 per centum deaths, attacked Accra, Kumasi, Tantum and elsewhere.

Smallpox prevalent in Colony, 406 cases with 7 per centum deaths.

Yellow fever, ten cases.

1925-26.

Education Ordinance to register schools and secure, *inter alia*, adequate health conditions.

Kumasi Public Health Board Ordinance to establish quasi-municipal body for Kumasi.

Mining Health Areas Ordinance to improve the health, housing and sanitary conditions for natives employed in mines—in force 1st January, 1926.

Town Planning Ordinance to control erection of buildings, proper layouts, etc., in interests of public health.

Smallpox, 1948 cases, scattered throughout Colony.

Pulmonary tuberculosis reported as the killing disease in Tarkwa and neighbouring mining areas.

Yellow fever, eight cases.

1926-27.

Births, Deaths and Burials Ordinance to secure uniformity in registration throughout the Colony.

New African hospitals opened at Bekwai and Tamale. Princess Marie Louise Welfare Centre, Accra, opened. New female wards constructed at European hospital, Accra. Venereal Diseases Clinic opened at Gold Coast Hospital, Accra.

Extensive town planning in Kumasi.

Quarantine Inspection and Disinfection Station built at Accra.

Leper settlement started at Ho, British Sphere of Togoland. Rockefeller (Yellow Fever) Commission began investigations. Relapsing fever at Accra, Kumasi, etc.,

Yellow fever, serious epidemic at Asamangkese and Suhum with minor incidence at Accra, Axim, Cape Coast, etc.

1927-28.

Committee appointed to report on possibilities of college in British West Africa for training medical practitioners and medical assistants.

Travelling dispensary system introduced in Northern Territories.

Welfare centre started in temporary quarters in Kumasi. League for Maternal and Child Welfare inaugurated to popuarize welfare centres, ante-natal consultations, hygiene of the home, etc..

Relapsing fever in Kumasi and Suhum.

Yellow fever, eighty-four cases in 18 areas mostly in Colony proper, high mortality and dislocation of trade owing to quarantine.

1928-29.

Building Regulations to control building of premises, materials of construction, foundations, walls, roofs, etc. Children (Care and Reformation) Ordinance to provide facilities for care of the wayward child, etc.

Quarantine Regulations in conformity with International Sanitary Convention, 1926, to protect countries from dangerous infectious diseases.

Spirit Licence (Amendment) Ordinance aimed at restricting consumption of certain alcoholic liquors.

Takoradi Harbour opened for commerce on 3rd December, 1928, increasing danger of sea-borne infectious disease.

African hospitals built at Oda and Wioso. Maternity Hospital opened at Kawli Bu, Accra, and training of midwives commenced. New welfare centre opened at Kumasi. Welfare centre established at Cape Coast. New contagious diseases hospital and tipping depot erected at Cape Coast.

Second travelling dispensary put into service.

Reclamation scheme for Kawli Lagoon, Accra, inauguarated.

Medical Secretary appointed to local branch British Empire Leprosy Relief Association.

Dr. Noguchi of Rockefeller Foundation and Dr. Young, Director of Medical Research, lost their lives in investigating cause o yellow fever, dying of the disease.

Yellow Fever Conference held at Dakar. Yellow fever, two cases—laboratory infections.

1929-30.

New African hospitals built at Axim, Sunyani and Yendi also by Ashanti Goldfields Corporation Ltd. at Obuasi. New welfare centre completed at Cape Coast. European Hospital at Sekondi converted into African Hospital and patients transferred to European Hospital, Takoradi.

Third travelling dispensary commissioned.

Cape Coast, pipe-borne water supply.

Smallpox, serious outbreak with 42 per centum deaths in Eastern Province, also in Ashanti and Northern Territories.

Yellow fever, no cases.

1930-31.

New African hospital opened at Lawra and new dispensary at Bawku.

Basel Mission opened hospital at Agogo.

New welfare centre constructed at Koforidua.

Scheme for training nurse-dispensers for village dispensaries (modification of Medical College Scheme) inaugurated with medical tutor.

Relapsing fever, cases at Accra and Kumasi.

Yellow fever, two cases.

1931-32.

Midwives Ordinance to regulate training and registration of midwives.

Retrenchment of medical, health—including welfare—and laboratory services.

Christiansborg welfare centre closed owing to retrenchment of staff and buildings lent temporarily to private medical practitioner.

Travelling dispensaries reduced to one owing to lack of staff. Nurse-Dispensers' Scheme considerably modified owing to retrenchment of medical tutor.

Tamale, pipe-borne water supply opened 26th March, 1932.

Navrongo, War Memorial Hospital built with Native Administration funds.

Bawku, new dispensary block.

Smallpox in Northern Territories and British Sphere of Togoland.

Relapsing fever at Accra and Kumasi.

Yellow fever, serious outbreak in Tamale and cases scattered elsewhere. Twenty cases with 60 per centum deaths.

1932-33.

Keta, greater part of hospital washed away by sea and contagious diseases hospital put into commission pending building of new hospital.

Prang, dispensary built by Sarikin Zongo.

Yendi, new female ward.

Owing to retrenchments, welfare centres at Cape Coast and Sekondi re-organised on voluntary basis under aegis of local division of Gold Coast Central Council Branch, British Red Cross Society, founded April, 1932, and having League for maternal and child welfare as its nucleus.

Disinfestation stations established at Kumasi and Tamale to deal with immigrants from French territory.

Trypanosomiasis caused anxiety owing to apparent increase.

Yellow fever, three cases.

(II) PRINCIPAL FACTORS AFFECTING HEALTH DURING 1933-34.

21. The total number of cases treated at hospitals, dispensaries and welfare centres amounted to 250,827 as compared with 240,056 in the previous year, an increase of 4.5 per centum.

22. The health of the non-native community showed a definite deterioration during the year when compared with 1932-33, both in respect of invalidings and of deaths. Malaria, blackwater fever and yellow fever took their toll of lives and such conditions as psychoneurosis or tropical neurasthenia with insomnia and asthenia occupied an important place on the list of causes of invaliding of both officials and non-officials.

23. Although the ratios of invalidings to the total and average number of African officials resident showed a slight decrease, that of deaths showed a very definite increase. It is a disquieting fact that eight invalidings and two deaths amongst this class were due to pulmonary tuberculosis.

24. Yellow fever re-appeared in several localities and was the cause of four deaths amongst seven cases. Full particulars of these cases are given in the Health section of this report. A large number of persons received a yellow fever inoculation in London. In some cases the reaction was rather severe and efforts are now being made by Findlay to obviate this deterrent.

25. Smallpox was fortunately not a serious factor in the health of the population, although a sharp outbreak occurred in the British Sphere of Togoland with extension to a neighbouring district towards the end of the period under review. In all, thirty-six cases were reported with ten deaths.

26. Diseases due to the enteric group increased from seventy-eight cases treated in 1932-33 to 129 in 1933-34. Anti-typhoid inoculation was encouraged and sixty-one Europeans and 455 Africans volunteered and received protection.

27. Malaria still occupied the highest position after yaws on the list of diseases treated at hospitals, dispensaries and welfare centres. The vast majority of the cases seen suffered from infection with P. falciparum.

The following table affords some idea of the relative importance of malaria in the past four years :—

TABLE II.

MALARIA.

	1930–31.	1931–32.	1932–33.	1933–34.
Total treated	24,993	30,062	20,340	25,584
Ratio per thousand of all cases treated ...	92	116	85	102

28. Eight cases of blackwater fever were reported in some 3,145 European residents, four being fatal. In addition, three cases with one death and seven cases with three deaths occurred in the Syrian and African communities respectively.

29. It is of interest to note that thirteen cases of diphtheria were seen of which two died. One non-fatal case was in a young European girl. It is fourteen years ago that the first case of this disease, confirmed by sugar reactions and animal inoculation, was discovered and since then very few cases hav been seen.

An investigation of the Schick reaction of the local inhabitants is contemplated.

30. Amoebic dysentery continued to be the most frequent type encountered. The incidence of dysentery during the last four years with the case mortality is shown in Table III.

TABLE III.

DYSENTERY.

Year.	Case incidence per thousand of all cases treated.	Case mortality (in-patients) per cent.
1930–31	5.5	11.5
1931–32	6.2	14.2
1932–33	5.9	11.3
1933–34	5.7	9.6

31. The position relating to leprosy remained unchanged but it appears probable that an extension of the work may be possible shortly with the help of a supernumerary medical officer sent out on behalf of the British Empire Leprosy Relief Association.

32. Yaws continued to hold first pride of place as the condition most frequently met. In point of fact, 60,394 cases were treated. This represents about one patient in every four attending for treatment.

33. Trypanosomiasis was described in the Report for 1932-33 as " causing anxiety." This anxiety was in no way dispelled as the result of thorough surveys carried out during the year. The surveys revealed a high infection rate in certain areas in the Protectorate of the Northern Territories and the British Sphere of Northern Togoland. In the past ten years the incidence per thousand of all cases treated has increased by over seventeen times. It must be remembered, however, that part at least of this increase is due to the special attention directed towards the disease. A full statement of the problem is included in Appendix IX.

34. The actual number of cases of the various forms of tuberculosis seen—and the large proportion of these were pulmonary in type—was slightly smaller than in the previous year but it would be very unwise to infer from this that the disease was on the decline ; there is little doubt, moreover, that the reverse is the case in view of the increased proportion of deaths reported to have taken place from the disease to deaths due from all causes in the registration areas in the Gold Coast Colony.

35. After non-tuberculous diseases of the respiratory system, pulmonary tuberculosis was once more the chief killing disease and its toll was especially severe in Tarkwa and the mining areas.

36. Table IV is a record of the incidence of cases seen in hospitals and dispensaries during the last four years.

TABLE IV.

TUBERCULOSIS.

Year.	Number of cases.	Case incidence per thousand of all cases treated.
1930–31	1,300	4.8
1931–32	1,340	5.2
1932–33	1,227	5.1
1933–34	1,193	4.7

37. Cancer was more frequently met with but a proportion of the increase was due to cases of malignant disease of the female genital organs diagnosed in out-patients.

38. Deficiency diseases occupied a very unimportant place on the list of in- and out-patients, differing little in number from the previous year; although the number of patients seen in whom starvation was diagnosed was almost doubled.

In both instances the figures are, perhaps, too small to allow of any deductions, although the temptation is great to attribute the increase in the proportion of patients suffering from starvation to the continued low price of cocoa and persistent unemployment.

39. Nine patients were diagnosed as suffering from locomotor ataxia as compared with fifteen during the previous year.

40. Trachoma was rather more frequently diagnosed than in the previous year.

41. Affections of the circulatory system constituted an unimportant proportion of the other conditions met with.

42. Diseases of the respiratory system, on the other hand, were more numerous and in a greater ratio than in the previous year.

43. The case mortality rate in lobar pneumonia was still definitely high being over 34 per centum.

Table V gives particulars of the incidence and mortality from all forms of pneumonia in the last four years.

TABLE V.

Year.	Case incidence per thousand of all cases treated.	Case mortality (in-patients) per cent.
1930–31	5.9	28.5
1931–32	8.3	33.1
1932–33	5.0	35.7
1933–34	5.7	29.7

44. Diseases of the digestive system were definitely diminished but it would be unwise to draw any definite conclusions therefrom and the trend should be watched.

45. Ankylostomiasis, whilst more often seen than during the year before, remains a factor of little importance in this country, although conditions frequently favour infection.

46. Ascaris is the more prevalent nematode although guinea-worm still remains a disabling factor of great importance in the Northern Territories where water supplies are usually inadequate as regards quantity and are polluted.

47. Schistosomiasis, usually of the haemotobium type, accounted for nearly six hundred patients treated.

48. Ulcers showed a relative and actual increase amongst out-patients and the debilitating effects of an inadequate diet in such conditions must not be forgotten.

49. As in the previous year 100 cases of snake-bite were treated but with only one death instead of three in 1932-33.

(*b*) Vital Statistics.

(I) GENERAL NATIVE POPULATION.

50. The estimated population for all classes of the community for the Colony and its Dependencies on the 30th of June, 1933, was 3,357,950.

51. Some 9,641 births were registered during 1933 in the thirty-one registration districts, an increase of 238 over the previous year. The " weighted average " birth-rate amounted to 34 per thousand living persons, a very slight decrease of 0.7.

52. Deaths numbered 6,264, an increase of 359 over the figure for 1932. The " weighted average " death-rate was 22.2 as compared with 21.8 per thousand living persons in the previous year.

53. Infant mortality rates for 1932 and 1933 were 102 and 100 respectively of deaths of infants under one year of age per thousand births, a very decided improvement on the figures for ten and twenty years ago.

54. Registration of births and deaths is compulsory but only in respect of thirty-one defined areas, for the most part important townships.

55. Further details of births and deaths in the thirty-one registration areas are given in Table C in the returns.

56. It is satisfactory to note that there were no serious epidemics during the year, although the recrudescence of sporadic cases of yellow fever and the occurrence of a small outbreak of smallpox in the British Sphere of Togoland towards the end of the year attended by a high case mortality gave rise to no little anxiety, more especially in view of the shortage of health staff following the retrenchment of officers at the height of the economic slump.

57. Up to the present there are little statistical data to show that the trade depression has had an adverse effect on the health of the population as a whole. On the other hand, the set-back to housing and sanitation which was referred to in the last year's report was still more noticeable in the year under review. Unless a measure of prosperity returns and makes it possible to regain at least the standards achieved before the slump—including adequate staff of medical and health officers—there is little doubt but that the death-rate will tend to increase. A note of warning is sounded by the actual increase in the death-rate of 1933 and by the fact that the number of patients whose condition was attributed to hunger has risen from thirty-six in 1932-33 to sixty-eight in 1933-34.

58. Two factors of particular importance to the general population during the year relate to the inauguration of a pipe-borne, filtered and chlorinated, water supply on the 29th of March, 1934, for the town of Kumasi—an inestimable benefit which cost £225,220—and to the very rapid developments in the gold mining industry. It is hoped during the coming year to introduce legislation to amend the Mining Health Areas Ordinance, which is now out of date, in such a way as to secure improved health conditions for the mining population anticipated to increase by at least 50 per centum.

59. Ancillary legislation is also contemplated to bring rural areas, more especially those adjoining mine areas, under health control. A great deal of importance is attached to these measures in view of the belief held by many that the high incidence of fatal pulmonary tuberculosis (and other respiratory diseases) in mine labourers serves as a focus of infection, not only in the mine camps but in the towns to which unfortunate sufferers drift after they have become incapacitated by the disease.

(II) GENERAL EUROPEAN POPULATION.

60. The European population increased by 186 during the year, chiefly as the result of an influx of mining engineers and prospectors. There was a reduction of 84 in the number of Government officials resident.

61. Table VI gives details of the actual number of Europeans resident..

TABLE VI.

NUMBERS RESIDENT.

	1931–32.	1932–33.	1933–34.
(i) Government officials	1,076	941	857
(ii) Employees of trading firms	1,365	1,310	1,359
(iii) Employees of mining companies	371	450	682
(iv) Missionaries	235	258	247
Total	3,047	2,959	3,145

62. Reference has already been made to the deterioration in the record in the health of the general European population in 1933-34 and further details are given in the relevant tables on succeeding pages which are self-explanatory.

(III) EUROPEAN OFFICIALS.

63. The remarks relating to the general European population are equally applicable to the official element as may be seen in Table VII.

TABLE VII.

SICK, INVALIDING AND DEATH-RATES.

	1931–32.	1932–33.	1933–34.
Total number of officials resident	1,076	941	857
Average number resident	819	639	617
Total number on the sick list	752	529	519
Total number of days on sick list	6,755	5,183	4,813
Average daily number on sick list	18.5	14.2	13.2
Percentage of sick to average number resident ...	2.3	2.2	2.1
Average number of days on sick list for each patient	9.0	9.8	9.3
Average sick time to each resident	8.3	8.1	7.8
Total number invalided	58	36	42
Percentage of invalidings to total residents ...	5.4	3.9	4.9
Percentage of invalidings to average number resident	7.1	5.6	6.8
Total deaths	7	1	3
Percentage of deaths to total residents	0.7	0.1	0.4
Percentage of deaths to average number of residents...	0.9	0.2	0.5

TABLE VIII.

LOSS OF TIME FROM SICKNESS.

Year.	Average No. resident.	Total sick days.	Total days on sick list for malaria.	Total days on sick list for other diseases.	Percentage of days lost through malaria to total days lost.	No. of days lost through malaria for the year per 100 residents.
1924–25 ...	680	8,614	1,746	6,868	20.3	256
1925–26 ...	761	6,108	1,547	4,561	25.3	203
1926–27 ...	783	6,847	1,204	5,643	17.6	153
1927–28 ...	835	7,023	1,530	5,493	21.8	183
1928–29 ...	881	7,177	1,661	5,516	23.1	188
1929–30 ...	972	7,795	1,920	5,875	24.6	197
1930–31 ...	936	7,961	1,610	6,351	20.2	172
1931–32 ...	819	6,755	1,381	5,374	20.4	168
1932–33 ...	639	5,183	1,056	4,127	20.4	165
1933–34 ...	617	4,813	922	3,891	19.1	149

64. Special records are given in Tables IX and X of invalidings and deaths of two groups of European officers (i) with maximum salary of not less than £600 per annum and (ii) with a maximum less than £600 per annum.

TABLE IX.

Invaliding according to Economic Group.

Year.	Maximum Salary not less than £600 per annum.			Maximum Salary less than £600 per annum.		
	Average number resident.	Invaliding.	Rate per 1,000.	Average number resident.	Invaliding.	Rate per 1,000.
1930–31 ...	653	36	55.1	283	13	45.9
1931–32 ...	598	32	53.5	221	26	117.6
1932–33 ...	471	27	57.3	168	9	53.5
1933–34 ...	463	27	58.3	154	15	97.4

TABLE X.

Deaths According to Economic Group.

Year.	Maximum Salary not less than £600 per annum.			Maximum Salary less than £600 per annum.		
	Average number resident.	Deaths.	Death-rate per 1,000.	Average number resident.	Deaths.	Death-rate per 1,000.
1930–31 ...	653	3	4.6	283	—	—
1931–32 ...	598	2	3.4	221	5	22.6
1932–33 ...	471	—	—	168	1	6.0
1933–34 ...	463	2	4.3	154	1	6.5

65. Table XI contains particulars of invaliding- and death-rates based on the average number resident for a period of ten years, whilst Table XII is an analysis of invalidings according to the period of a tour at which the officer had to proceed to England and his conditions of service.

TABLE XI.

Invaliding- and Death-Rates.

Year.	Average number resident.	Total invalided.	Percentage invalided.	Total died.	Death-rate per 1,000.
1924–25	680	58	8.5	7	10.2
1925–26	761	59	7.8	8	10.5
1926–27	783	49	6.3	3	3.8
1927–28	835	39	4.7	6	7.1
1928–29	881	50	5.7	4	4.5
1929–30	972	49	5.0	5	5.1
1930–31	936	49	5.2	3	3.2
1931–32	819	58	7.1	7	8.5
1932–33	639	36	5.6	1	1.5
1933–34	617	42	6.8	3	4.8
Average for the period ...	792.3	48.9	6.3	4.7	5.9

TABLE XII.

Invalidings According to Service and Leave Conditions.

Serving under	Under 6 months.	6 but under 9.	9 but under 12.	12 but under 15.	15 but under 18.	18 months and over.	Total.
Old Leave Regulations	1	—	—	—	—	—	1
New Leave Regulations	4	6	4	10	15	2	41

66. The causes of invalidings of European officials during 1933-34 are subjoined in Table XIII :—

TABLE XIII.

Causes of Invalidings.

Paratyphoid	1	Liver abscess	1
Malaria (benign)	1	Jaundice	1
Malaria (malignant)	4	Renal calculus	1
Blackwater fever	3	Renal colic	1
Dysentery	1	Pyuria	1
Trypanosomiasis	1	Boils	1
Diabetes	1	Local injuries	2
Neuritis	3	Fracture	1
Cardiac irregularity	1	Asthenia	5
Chronic bronchitis	1	Pyrexia of uncertain origin ...	2
Pharyngitis	1	Insomnia	2
Duodenal ulcer	1	Post-operative adhesions ...	1
Dyspepsia	1	Psychoneurosis	2
Biliary calculus	1		
		Total	42

Of the forty-two officials invalided, two were military officers.
Two European officials died of blackwater fever and one of pneumonia.

(IV) EUROPEAN NON-OFFICIALS.

67. It will be seen from Table XIV that the improvement in the invaliding- and death-rates amongst European non-officials noted in 1932-33 met with a set-back in the year under review.

68. The actual causes for which individuals in this class were invalided or from which they died are given in Tables XV and XVI.

TABLE XIV.

1931–32.		Number.	Deaths.	Invalided	Death-rate per thousand.	Invaliding-rate per thousand.
Merchants ...	Males	935	12	13	12.8	13.9
	Females	430	2	6	4.6	13.9
Mining Companies	Males	357	3	12	8.4	33.6
	Females	14	—	—	—	—
Missionaries	Males	142	1	7	7.0	4.9
	Females	93	—	5	—	54.3
Totals and averages ...		1,971	18	43	9.1	21.8
1932–33.						
Merchants	Males	903	3	14	3.3	15.5
	Females	407	—	3	—	7.4
Mining Companies	Males	428	3	9	7.0	21.0
	Females	22	—	—	—	—
Missionaries	Males	155	1	7	6.4	45.2
	Females	103	2	2	19.4	19.4
Totals and averages ...		2,018	9	35	4.4	17.3
1933–34.						
Merchants	Males	885	6	13	6.8	14.7
	Females	474	—	—	—	—
Mining Companies	Males	658	8	22	12.1	33.4
	Females	24	—	—	—	—
Missionaries	Males	146	1	4	6.8	26.7
	Females	101	—	1	—	9.9
Totals and averages ...		2,288	15	40	6.6	17.5

TABLE XV.

Invalidings.

Malaria	2	Angina pectoris	1
Dysentery	1	Haematemesis	1
Anterior poliomyelitis	1	Emphysema	1
Pulmonary tuberculosis ...	3	Tonsillitis	1
Gonorrhoea	1	Gastric ulcer	2
Carcinoma, gall-bladder ...	1	Appendicitis	1
Carcinoma, liver	1	Liver abscess	2
Anaemia	1	Boils	1
Disease of pituitary gland ...	1	Carbuncle	1
Neurasthenia	4	Debility	1
Neuritis	3	Insomnia	1
Iritis	1	Psychoneurosis	4
Chronic mastoiditis	1	Indefinite	2
		Total	40

TABLE XVI.

Deaths.

Malaria	2	Lobar pneumonia	4
Blackwater	2	Drowning	1
Yellow fever	2	Mining accident	1
Fibroid phthisis	1	Fracture	1
Heart failure	1	Total	15

(V) AFRICAN OFFICIALS.

69. Although there was one less invaliding amongst the increased number of African officials employed in Government service during the year, the number of deaths and the death-rate shewed a decided increase.

70. Further particulars are given in Tables XVII, XVIII and XIX, the last two relating to invalidings and deaths, respectively.

TABLE XVII.

Sick, Invalidng-and Death-Rates.

	1931–32.	1932–33.	1933–34.
Total number of officials resident	4,994	3,386	3,761*
Average number resident	4,576	3,096	3,538
Total number on sick list	1,316	1,045	1,090
Total number of days on sick list	14,190	12,199	11,262
Average daily number on sick list	33.8	33.4	30.9
Percentage of sick to average number resident	0.8	1.1	0.9
Average number of days on sick list for each patient	10.8	11.7	10.3
Average sick time to each resident	3.1	3.9	3.2
Total number invalided	30	34	33
Percentage of invalidings to total residents	0.6	1.0	0.8
Percentage of invalidings to average number resident ...	0.7	1.1	0.9
Total deaths	16	12	20
Percentage of deaths to total residents	0.3	0.4	0.5
Percentage of deaths to average number resident ...	0.3	0.4	0.6

*Increase due to including railway officials.

TABLE XVIII.

Invalidings.

Trypanosomiasis	1	Myocarditis	1
Spinal caries	2	Arterio-sclerosis	1
Tuberculosis, lung	8	Fistulae	1
Carcinoma, liver	1	Tumour, uterus	1
Tumour, intestine	1	Osteo-arthritis	3
Cerebral haemorrhage	1	Osteomyelitis	1
Valvular disease, heart	2	Debility	2
Blindness	1	Psychoneurosis	5
Defective vision	1		
		Total	33

TABLE XIX.

Deaths.

Typhoid	1	Dementia	1
Tuberculosis, lung	2	Pneumonia	6
Toxaemia	1	Gastro-enteritis	1
Endocarditis, septic	1	Peritonitis	1
Cerebral haemorrhage	3	Injuries	2
Haemorrhage	1		
		Total	20

TABLE XX.

	Population.					Births.		Birth-Rate.		Deaths.		Death-Rate.	
	1921.	1931.			Mid-year 1933.	1932.	1933.	1932.	1933.	1932.	1933.	1932.	1933.
		Males.	Females	Totals.									
Accra and Labadi ...	41,124	32,833	27,893	60,726	65,136	2,916	2,799	46.2	43.0	1,378	1,476	21.8	22.7
Aburi	—	2,034	1,666	3,700	3,700*	89	109	24.1	29.5	89	86	24.1	23.2
†Ada	5,907	2,196	2,254	4,450	4,450*	47	65	19.8	—	24	41	9.7	—
Akuse	4,145	1,784	1,874	3,658	3,658*	92	72	25.2	19.7	78	71	21.3	19.4
Dodowa	1,061	1,145	1,077	2,222	2,483	158	154	66.8	62.0	82	77	34.6	31.0
Keta	—	3,063	3,342	6,405	6,405*	162	213	25.3	33.3	59	103	9.2	16.1
Koforidua	5,364	5,816	4,713	10,529	11,691	450	480	40.3	41.4	272	270	24.3	23.0
Kpong	3,285	1,427	1,477	2,904	2,904*	94	88	32.4	30.3	71	54	24.4	18.6
Nsawam	6,143	4,916	3,966	8,882	9,498	209	243	22.7	25.6	223	184	24.2	19.4
Somanya	3,428	1,213	1,438	2,651	2,657	103	82	38.8	30.9	100	72	37.6	27.1
Cape Coast	14,921	9,603	8,082	17,685	18,307	480	562	26.6	30.7	359	353	19.9	19.3
Elmina	5,262	2,186	2,611	4,797	4,797*	232	237	48.4	49.4	129	123	26.9	25.6
Oda	—	3,691	2,448	6,139	6,139*	179	205	29.2	33.4	161	171	26.2	27.9
Saltpond	6,342	3,277	3,092	6,369	6,375	252	280	39.4	43.9	155	145	24.2	22.7
Winneba	6,980	6,033	4,893	10,926	11,814	367	400	32.1	33.9	273	273	23.9	23.1
Aboso	—	3,994	2,587	6,581	6,581*	122	90	18.5	13.7	188	190	28.6	28.9
Axim	3,781	2,367	2,166	4,533	4,702	179	150	38.7	31.9	128	139	27.7	29.6
Dunkwa	2,005	1,826	2,134	3,960	4,400	111	126	26.4	28.6	133	146	31.6	33.2
Prestea	—	1,667	822	2,489	2,489*	88	115	35.4	46.2	94	126	37.8	50.6
Sekondi	9,500	10,020	6,933	16,953	18,630	400	371	22.4	19.9	209	232	11.7	12.5
Tarkwa	2,671	2,012	1,309	3,321	3,467	91	95	27.3	27.4	192	185	57.5	53.4
Bekwai	—	2,085	1,654	3,793	3,793*	374	294	99.6	77.5	77	79	20.5	20.8
Kintampo	—	1,339	976	2,315	2,315*	73	49	31.5	21.2	75	69	32.4	29.8
Kumasi	23,694	21,219	14,610	35,829	38,559	961	898	25.7	23.3	658	770	17.6	20.0
Obuasi	3,917	4,746	2,852	7,598	8,426	121	118	15.0	14.0	187	233	23.2	27.7
Sunyani	—	1,568	1,243	2,811	2,811*	103	103	36.6	36.6	130	159	46.2	56.6
Salaga	3,207	2,630	2,196	4,826	5,190	168	173	33.4	33.3	152	127	30.2	24.5
Tamale	3,901	7,045	5,896	12,941	14,975	635	784	45.1	52.4	158	187	11.2	12.5
Ho	3,142	1,747	1,660	3,409	3,467	120	129	34.9	37.2	71	80	20.6	23.1
Takoradi	—	3,393	2,085	5,478	5,478*	—	130	—	23.7	—	43	—	7.8
Totals and "weighted averages"	159,780	148,875	119,949	268,880	285.297	9,376	9,614	34.7	34.0	5,905	6,264	21 6	22.2

*In the case of towns marked with an asterisk the census population at April, 1931, is taken in lieu of an estimated mid-year population, either because the populations of such towns were not enumerated in 1921 or because their populations are decreasing.

†This registration area was extended to include Big Ada by Order by the Governor, No. 19 of 1933, dated the 1st of November, 1933 It is not possible, therefore, to give accurate birth and death-rates for this combined area for the year, 1933.

II. Table showing Births, Deaths and the Infant Mortality Rate at Six Principal Towns.

Station.	1929.			1930.			1931.			1932.			1933.		
	Births.	Deaths.	Infant mortality rate.	Births.	Deaths.	Infant mortality rate.	Births.	Deaths.	Infant mortality rate.	Births.	Deaths.	Infant mortality rate.	Births.	Deaths.	Infant mortality rate.
Accra	2,576	1,293	135	2,599	1,250	112	2,901	1,299	95	2,576	1,282	117	2,799	1,476	117
Kumasi	742	642	125	774	727	124	952	805	120	96	658	115	898	770	112
Cape Coast	460	311	63	552	317	61	489	319	85	480	359	83	562	353	103
Sekondi	253	279	110	289	291	114	242	236	95	400	209	42*	371	232	72
Koforidua	513	253	124	345	402	208	365	289	153	450	272	95	480	270	85
Tarkwa	71	123	112	65	144	200	44	179	340	91	192	208	95	185	147
Total ...	4,615	2,901	—	4,624	3,131	—	4,993	3,127	—	4,958	2,972	—	5,205	3,286	—

*This figure is unreliable.

III. HYGIENE AND SANITATION.

(a)—General review of work done and Progress made.

I—PREVENTIVE MEASURES.

(i) Mosquito and Insect-borne Diseases.

(a) *Malaria.*

71. During the period under review 485 deaths were registered as due to malaria; of this total 219 were females and 266 males.

The deaths resulting from malaria represented 7.53 per centum of the total deaths registered from all causes.

72. The malaria question, as usual, is the most formidable and universal problem but it is the most important predisposing factor of mortality and morbidity especially to be faced by the Health Branch. As a cause of death it does not loom largely in the young.

It is responsible for most of the labour inefficiency and loss of time. It is liable to recur at any age and complicate any pathological process; and it requires careful exclusion before an early diagnosis of the more serious febrile infections can be made.

73. During the rains the mosquito vectors (*Anopheles gambiae* and *Anopheles funestus*) are almost universal in the coastal belt, in the areas of light forest and the plains.

They breed in the exposed and the lightly shaded waters. In the densest forest areas breeding is often difficult to demonstrate until man-made clearing yields a suitable environment.

The clearing of heavy forest and thick bush shaded by tall trees should be undertaken with caution, and not more ground exposed than can be rendered safe by filling and draining. The majority of town sites consist of alternating, well-drained areas and intersecting, or surrounding strips of low-lying land which may accommodate sluggish rivers, swamps or lagoons.

74. During 1933-34 little permanent drainage only has been undertaken, but progress has be made at Obuasi, Tamale and Takoradi.

An extra 500 yards has been added to the retaining-wall defining the edge of the Kawli Lagoon in Accra.

A large amount of drainage by the provision of earth drains, however, has been accomplished at Accra, Koforidua, Kumasi, Obuasi, Takoradi, Tamale, Tarkwa and elsewhere. This drainage is usually combined with filling, the provision of open, or subsoil, collateral feeder-drains and protective contour drains.

An effort is being made, generally, to substitute permanent or semi-permanent works in replacement of costly, recurrent, oiling methods wherever possible. Good work has been accomplished at Keta and Winneba in the definition of the lagoon edges.

75. The anti-malaria measures undertaken during the year briefly may be summarised as follows:—

(*a*) The drainage of low-lying areas liable to swamping by graded earth drains fed by open or subsoil, " herring-bone " collaterals.

(*b*) The filling of pools and swamps, or depressions liable to swamping, when filling material is available. Indestructible refuse covered with a good top-dressing of earth or incinerator ash is often used for this purpose.

(*c*) The treatment of standing water of limited extent, which it is impossible to drain and the filling-in of which would take a long time with oil or Paris green.

(*d*) The delimination of the edges of lagoons and the rough training of streamways.

(*e*) The provision of contour-drains and vertical drainage where such methods are practicable.

(*f*) The stocking of suitable collections of water with larvae-eating top-minnows.

(*g*) The clearing of grass and bush in the vicinity of houses.

(*h*) The treatment of cases of malaria at hospitals, infant clinics and dispensaries, *i.e.* the sterilisation of the blood of the infected in so far as this is possible.

(*i*) Education in methods of personal protection against mosquito bites, *e.g.* the use and care of the mosquito-nets, the wearing of mosquito-boots, etc., and the advantages to be derived from the taking of prophylactic quinine.

76. The splenic indices of children examined at four important centres are shown below :—

TABLE XXI.

Town.	Percentage with enlarged spleens.
Cape Coast	29.3
Kumasi	23.5
Takoradi	20.0
Accra	19.6

77. The mosquito-proofing of bungalows can be a most important method of protection.

So much depends, however, on the personal interest of the occupant and the standard of intelligence of his house servants that the results obtained can never be uniform.

The complete protection of bungalows not built with this end in view is, usually, a most expensive proceeding.

Partial protection and the provision of mosquito-proofed sitting accommodation often can be provided, and is most valuable in situations such as obtain in Kawli Bu and Tamale where radical measures of mosquito-control present formidable difficulties and entail the expenditure of large sums of money.

Particulars of quarters wholly or partially mosquito-proofed are given below :—

TABLE XXII.

	Total Permanent Quarters.	Total Temporary Quarters.	Total " Bush " Quarters.	Number partly protected.	Number completely protected.
Accra	254	—	—	23	—
Akuse	16	—	—	—	—
Koforidua and Nsawam ...	75	2	—	3	—
Winneba and Cape Coast ...	51	13	3	—	—
Takoradi, Sekondi, Axim and Tarkwa	102	6	4	10	12
Dunkwa	10	4	1	nil	2
Ashanti	152	—	2	3	—
Northern Territories	42	22	1	34	—
	702	47	11	73	14

(*b*) *Yellow Fever.*

78. During the period under review seven cases of yellow fever occurred with four deaths. Of these seven cases three were Europeans. All the European cases proved fatal. One of the European cases was not seen during life by a medical officer owing to his isolated position, but the subsequent inquiry left little doubt as to the diagnosis, and the case was reported to the neighbouring Administration as yellow fever. A post-mortem examination was not possible in this case.

79. The incidence of yellow fever from 1921 to 1933 is shown in Table XXIII, below :—

TABLE XXIII.

Year.	Cases.	Deaths.	Percentage mortality.
1921	4	4	100.0
1922	10	8	80.0
1923	19	16	84.2
1924	8	6	75.0
1925	7	4	57.1
1926	65	18	27.7
1927	107	40	37.4
1928	2	2	100.0
1929	—	—	—
1930	2	1	50.0
1931	17	12	70.6
1932	4	—	—
1933	7	4	57.1

80. During the past few years it has proved increasingly difficult to subject all premises in the more important centres to a sufficiently frequent inspection.

The force of sanitary inspectors has, therefore, been reinforced by considerable numbers of " mosquito inspectors," delegated under section 3 (1) of Chapter 108, Mosquitos Ordinance.

In most of the large centres, as a result, all premises can be inspected at least once in every 7-10 days.

An increase of ten new appointments authorised in the grade of Sanitary Inspectors-in-Training for 1934-35 will be a very welcome reinforcement.

81. As close a watch as possible is kept on the small towns and larger villages along strategic trade routes and in suspected " endemic " areas.

Several such villages and towns have been brought under the provisions of the Mosquitos Ordinance during the period under review.

82. The majority of the villages and small rural centres, however, cannot of a necessity be inspected with regard to the breeding of domestic mosquitos. Many such villages, in which during the rains a high larval index may be recorded on inspection, tend to crowd round the larger centres and spring up in the vicinity of any important, new, mining area. Control needs to be extended.

83. The memory of the general community is short when former severe outbreaks of yellow fever are concerned.

The attendant restrictions of trading facilities and limitations of movement are soon forgotten and the efforts of the Health Branch tend to receive more and more opposition, until another explosion brings the problem again forcibly before the general public.

84. In the centres where full control over the breeding of domestic mosquitos is possible *Aedes aegypti* can be kept safely within bounds. Sporadic, imported or indigenous cases do occur but any epidemic spread is unlikely.

The possible presence of other, less readily controlled mosquito vectors is a matter of no little concern. The chief anxiety arises with regard to *Culex thalassius*—a common, seaboard mosquito throughout the Gold Coast.

85. The carelessly thrown-away tin and bottle lying hidden in long grass, weeds or growing bush on the perimeter of incompletely controlled, overgrown villages very often collect water and serve as a " nursery " for *Aedes aegypti*. The record of these appear in no larval index of premises inspected in that particular town or village, and are as serious a menace as the strictly " domestic " breeding. At present, when it is becoming increasingly difficult to obtain sufficient clearing round rural villages and small towns, this factor is a growing menace.

86. In the past much careless disposal of potentially water-containing refuse took place round many of the old mines, since closed. When prospecting on these old properties started, on the commencement of the present gold mining activities, the presence of this indestructible refuse and old scraps of water-retaining machinery have proved a dangerous factor and the cause of great anxiety to the Health Branch.

87. The racial incidence and case mortality are to be found in Table XXIV.

TABLE XXIV.

	Colony.			Ashanti.			Northern Territories.		
	Cases.	Deaths.	Mortality. %	Cases.	Deaths.	Mortality. %	Cases.	Deaths.	Mortality. %
African.									
Males ...	3*	1	33.3	—	—	—	—	—	—
Females ...	1	—	—	—	—	—	—	—	—
European.									
Males ...	2	2	100	—	—	—	1†	1	100
Females ...	—	—	—	—	—	—	—	—	—
Total ...	6	3	50.0	—	—	—	1	1	100

*Two African cases who recovered yielded no " protection " when tested.

†Not confirmed.

88. No cases occurred among Syrians during the year.

89. Preventive measures undertaken during the year briefly may be summarised as follows :—

(*a*) Organised inspections of all premises in the larger centres. These inspections are carefully controlled by means of " check " and " cross " inspections, and are arranged so as to ensure the inspection of all premises every seven to ten days.

The results of the total inspections carried out by officers of the Health Branch during 1934-35 are given below in Table XXV.

TABLE XXV.

Number of Inspections.	Number of premises with larvae.	Larval Index.
1,762,560	9,796	0.6

(*b*) The living of European officials in well-organised residential areas and the encouragement of European trading firms to acquire building plots, or to take existing bungalows in these areas to accommodate members of their European staffs.

Experience has proved the real value of these residential areas and, considering the present stage of our knowledge, they must still be considered the most important factor in maintaining the health of the European community in the Gold Coast. Any laxity in control defeats the whole purpose for which these residential areas were instituted.

(*c*) Notices have been published at regular intervals drawing the attention of officials and Europeans of the trading community to the benefits of protective inoculation, and advising all Europeans to undergo such immunisation when on leave in the United Kingdom. Several have responded, and it appears likely that this movement will spread ultimately to include the majority of Europeans in the Gold Coast.

(*d*) As in former years much help has been forthcoming from the West African (Rockefeller) Yellow Fever Commission during the year in checking diagnoses of yellow fever, made on clinical grounds, by " protection " tests. The closest touch is kept with the Commission, and much valuable aid and advice has been forthcoming on many points presenting difficulties.

(*c*) *Filariasis.*

90. Most stations report occasional cases.

The condition, however, cannot be considered very common and does not demand any special methods of control other than those already briefly detailed in the preceding paragraph.

(*d*) *Dengue.*

91. Sporadic cases occur from time to time. Only rarely does this disease assume epidemic proportions.

In September, 1933, an epidemic broke out in a girls' school, situated at Odumase in the Eastern Province of the Colony. A total of forty cases occurred, representing nearly seventy five per centum of the total pupils. No special methods of prevention were adopted save those already enumerated under the control of *Aedes aegypti.*

(*e*) *Trypanosomiasis.*

92. During the year 117 deaths from trypanosomiasis were registered; of these 109 or 93.2 per centum were in males. Of the above total number of deaths 69, or some 59 per centum, were registered in Kumasi.

The total number of deaths registered in Kumasi during 1933-34 was only twenty.

Death registration, however, is not general throughout the Gold Coast and the above figures cannot be considered as representing the real incidence of the disease.

93. In view of the fact that the trypanosomiasis problem is dealt with in detail in Appendix IX to the Medical Report, it is not proposed to offer any further comments in this section on this occasion.

(ii)—Epidemic Diseases.

(*a*) *Plague.*

94. No case of plague was reported in the Gold Coast during 1933-34.

Plague always threatens. It is considered on good grounds to be endemic in the Islands and in French Territory to the north.

Ships have been coming alongside the quay at Takoradi now for some three years and this consideration necessitates increased watchfulness and care.

95. Some 77,033 rats were destroyed at ports and inland centres during the year. A representative proportion of these rats was subjected to bacteriological examination and no plague-infected rat was found.

96. During the year an effort was made to increase the efficiency of the rat-catching gangs in the port areas at Takoradi and Accra with no little success.

97. A considerable amount of rat-proofing of stores, warehouses and cocoa sheds still remains to be done both at Takoradi and Accra. Financial stringency, however, must make progress slow.

98. A reserve stock of plague vaccine is always kept at Accra in case of emergency.

(*b*) *Cholera.*

99. Up to the present cholera has not made its appearance in the Gold Coast. Preventive measures against this disease follow the same lines as those mentioned briefly under enteric in Section (*d*).

(*c*) *Smallpox.*

100. In spite of serious outbreaks of smallpox in surrounding territories, the Gold Coast remained very free of the disease.

One case occurred in the Tarkwa District of the Western Province early in the year.

101. Towards the end of the year an outbreak took place in the Ho District of Togoland.

A total of 36 cases was seen of which 10 or 27.8 per centum died. This represents a high mortality rate. Energetic action was taken at once and the outbreak was speedily got under control.

102. The principal method of prevention was organised vaccination.

Lanolinated lymph, supplied by the Lister Institute, was used throughout the year with uniform success. The cost of the lymph used was £1,989 9s. 7d.

103. The regular staff of 12 assistant public vaccinators is posted in the larger centres, ports, at strategic points where trade routes converge and at ferries.

Temporary assistant vaccinators are gazetted from time to time when emergencies arise and when fresh districts are brought under control.

104. The result of the year's vaccinations is shown in Table XXVI.

TABLE XXVI.

	1932–33.	1933–34.
Total persons vaccinated	372,190	377,768
Number verified successful	118,679	92,123
Percentage successful	85.2	83.1

(*d*) *Enteric Fever.*

105. During 1933-34 fourteen deaths were registered as due to diseases of the enteric group compared with a total of four registered during the previous 12-monthly period.

106. This total is not unreasonably high but it is thought, it is very far from representing the actual case incidence of the disease.

Whether it is generally on the increase or whether the increase is apparent, depending on more scientific methods of diagnosis, is hard to say.

The brunt of the disease in Africans would appear to fall more particularly on the educated clerical class.

107. It can well be understood, it is thought, that in the centres where pit-latrines instead of pan-latrines have had to be provided owing to lack of funds, this disease may well show an increase over the next few years. However carefully constructed, pit-latrines must always be liable to breed out flies even if carefully screened, covered and fly-trapped.

108. The benefit to be derived from protective inoculation has been kept well before Europeans, both official and of the trading community.

All departments were circularised during the year encouraging African officials, also, to become protected against this disease group but little response was forthcoming.

109. The main methods of prevention have been careful disposal of night-soil and the provision of adequate latrine accommodation of as good a type as possible; the control of markets and protection of foodstuffs; education of the people regarding the " fly-menace "; the protection of water supplies and careful disposal of destructible refuse likely to act as a fly-breeding medium.

(*e*) *Dysentery.*

110. During the year under review 530 deaths were registered as due to the disease group " dysentery, diarrhœa and enteritis " representing some 8 per centum of all deaths registered.

It is only exceeded as a cause of death by diseases of the respiratory system—" pneumonia, broncho-pneumonia and bronchitis " and by tuberculosis.

111. The amœbic form of dysentery is approximately twice as common as the bacillary form of the disease.

112. The places which suffer mostly are the smaller, backward, rural areas where sanitation is lacking and where pollution of the water supplies is liable to take place.

Methods of prevention are the same as briefly outlined in section (*d*) above.

(*f*) *Cerebro-Spinal Fever.*

113. Two sporadic cases only of epidemic cerebro-spinal meningitis were recorded during 1934-35. For several years past the case incidence has been represented by a few scattered cases, nothing like an epidemic outbreak having taken place.

Usually cases occur in the colder part of the year during the " harmattan " season when a great deal of over-crowding results for the purpose of maintaining warmth.

It is a disease, however, which demands respect for the conditions over wide areas are conducive to an epidemic outburst at any time.

114. Preventive methods may be summed-up briefly in the improvement of ventilation in dwellings and the prevention of overcrowding.

Both these desiderata are hard to obtain.

It is not always easy to insist on the provision of sufficient window area and the substitution of the jalousie for the shutter, except in the larger centres where house plans are submitted for approval and where constant supervision is possible during the building of a house.

115. Overcrowding, it is believed, is an increasingly important factor.

The itinerant, labouring classes when out of work tend to live with and on " brothers " still in employment. They crowd into their rooms which are often filled to the utmost limit of their capacity.

The " atmosphere " of such overcrowded rooms in the early morning is hard to exaggerate.

It is extremely difficult to apply the relevant law in abating such a nuisance.

116. The extension of town-planning and the lay-out of townships and villages is an important factor in the prevention of this disease.

(*g*) *Relapsing Fever.*

117. During the year two deaths were registered as due to relapsing feve. There was no epidemic outbreak in any locality. Kumasi reported the largest number of cases, all occurring in casual, itinerant labourers.

The tribes showing the highest degree of infection are those from French Territory, usually Boweris and Zabramas.

118. There are two, regular disinfestation stations. One is situated at Kumasi and the other at Tamale in the Northern Territories. At these stations immigrant labourers, pressing south in search for work, are shaved, bathed and their clothing disinfested. At the Kumasi centre, alone, over 20,000 persons were dealt with during the year.

119. In Kumasi periodic drives are carried out in the Zongo in the early mornings and hundreds of homeless wanderers, usually in a grossly filthy condition, are cleansed and disinfested.

120. Relapsing fever, although not figuring high in the list of fatal diseases, has to be treated with much respect owing to the difficulty in some cases of distinguishing between it and yellow fever both during life and on post-mortem, until the condition is made clear in due course by microscopic examination.

121. An important preventive method is the treatment of the sick with organic arsenical preparations and thorough disinfestation of all contacts and their lodgings.

Whenever possible the compounds in which cases have occurred are, also, dealt with, but as a rule the sufferers are homeless.

(*h*) *Yaws.*

122. Of 38,742 outpatients treated at the infant clinics 12.5 per centum were yaws cases.

123. Yaws, apparently, depends for its case incidence on the degree of excellence, or otherwise obtaining in the general environmetal sanitation of any particular town or village.

Indigenous yaws is seldom seen in the larger, moderately well sanitated centres. Its intensity, however, grows as the more rural and backward areas are penetrated.

For the last four or five years yaws has been on the decrease. It is thought likely, however, that during the next few years an increase may come to light. The standard of rural sanitation has fallen, generally, and is likely to fall still further with a corresponding rise in the incidence of yaws.

124. Preventive methods resolve themselves into the treatment of cases in the infective stage and efforts to improve the standard of rural sanitation generally.

Other Diseases.

(*a*) *Leprosy.*

125. Owing to shortage of staff nothing has been added to our previous information with regard to the incidence of this disease.

In the 1931 Census Report some 5,000 lepers were enumerated. For many reasons this figure cannot be accepted as representing the full significance of the problem. It is generally accepted that the incidence of this disease is in the region of 1.5-2 *per mille,* and that the percentage increases the further north one proceeds.

126. Settlements are maintained at Accra, Ho, Kumasi, Navrongo, Sekondi and Yendi.

The Ho settlement is the principal one and accommodates 375 cases.

The settlement at Navrongo is maintained and organised by the White Fathers.

127. Sufferers are persuaded to submit to voluntary segregation and enter one of these settlements, but are, usually, not willing to do so until in an advanced stage and turned out of home by their relatives or friends.

128. There is some indication that sufferers are reporting for treatment as outpatients at an earlier stage of the disease, but progress is slow, their patience often evaporates and they may stop coming for treatment.

Treatment, as a general rule, consists in the administration of Alepol or Moogrol and attention to other concurrent, pathological conditions such as helminthiasis, malaria and chronic skin conditions. Protein shock treatment has been ultilised with benefit in some advanced cases.

129. Where lepers cannot be persuaded to enter in of the settements, they—through the owner of the house—are advised to live in a room apart and retain for their own use bedding, clothes, eating utensils, etc.

Such advice is not infrequently well carried out.

(*b*) *Tuberculosis.*

130. Tuberculosis was responsible for 649 deaths during the year, or 10.1 per centum of all deaths registered. Of this total 489 cases were males and 160 females.

As a "killing" disease tuberculosis stands supreme and is only surpassed the combined diseases of the group "pneumonia, broncho-penumonia and bronchitis." There is no need, therefore, of stressing the importance of this disease.

131. Tuberculosis, other than the pulmonary form, accounts for some five per centum only of the total deaths.

132. The disparity between the mortality figures of males and females is capable of ready explanation. The brunt of the disease falls particularly on the labourer, often an immigrant, in the 25-45 age group. Many of these are under-nourished and almost invariably live under insanitary, overcrowded conditions. They are subject to overstrain and exposure to a high degree.

133. Is tuberculosis generally on the increase? Of this there is no definite statistical proof. It is believed, however, that tuberculisation of the community in the more settled populous centres is considerable, and it is very possible that a certain degree ot resistance is gradually being built-up.

In the further removed areas, where death registration does not obtain, it is believed to be on the increase.

Most of the labour employed in the Gold Coast is drawn from such localities, and the tuberculous ex-labourer must often spread the infection on returning home.

134. The part played by the deep mines is not easy to envisage. During 1933-34 the mines with medical officers returned a ratio of deaths from tuberculosis to total deaths from all causes, excluding accident, of some 11.0 per centum. For many reasons this figure is not satisfactory for, legally, a mine labourer ceases to be such when he has left the work for three months.

In the past, it is believed, the part played by the deep mines was considerable, to-day this question is apparently almost inextricably bound up with the problem as a whole.

135. The causes for the high death-rate from tuberculosis are not difficult to find—overcrowding—deplorable housing conditions in many centres and rural areas, under-nourishment, exposure, strain, a vitamin-deficient dietary, low resistance, the universal spitting habit and widespread ignorance of the all-important laws of health all play their various parts with deadly effect.

136. Prevention against tuberculosis resolves itself briefly under three heads :—

(*a*) The improvement of housing conditions in the large centres, townships and rural areas. A long procedure which will take time. A much better type of house is being built on layouts in the large centres, but in most, if not all, overcrowded "warrens" still are in existence. In the rural areas the question is to a great extent one of education and example.

(*b*) The extension of layouts in the township and rural areas.

(*c*) Education in its broadest sense of people of all ages and classes, with particular stress on the school child.

(*c*) *Pneumonia.*

137. Diseases of the group " pneumonia, broncho-pneumonia and bronchitis " head the list of killing diseases.

During 1933-34 some 1,017 deaths were registered as due to this disease group. This total represented 15.8 per centum of all deaths registered.

In this group, again, males between the ages of 25-45 suffered most, but a high incidence was also reflected in the very young.

138. The causes and methods of prevention are much as stated in the preceding section.

139. From a health standpoint diseases of this group are extremely important not only on account of their position in the list of fatal diseases but also on account of the fact that in sudden, severe cases death may be almost as rapid as can be seen in such diseases, even, as plague.

Signs and symptoms, save those of profound septicaemia, are sometimes wanting and an autopsy and further bacteriological examination may be required finally to clear up the diagnosis.

It is well known that the " pneumonia " liver may be indistinguishable microscropically from the true yellow fever condition.

It appears probable that in the young not a few fatal cases diagnosed as broncho-pneumonia have a malarial or helminthic basis and often a combination of both.

(iii)—Helminthic Diseases.

(*a*) *Ankylostomiasis.*

140. During 1933-34 only fourteen deaths were registered as due to ankylostomiasis. Over the same period no death resulting from ankylostomiasis was recorded in the mortality returns from the various mines of the Gold Coast.

This infestation in a minor degree is common, but compartively rarely results in clinical manifestations even when the infestation is moderately heavy.

Although ankylostomiasis ranks low in the list of killing diseases it is an important factor in lowering resistance and predisposing to other more fatal infections.

Prevention briefly can be summed-up in the provision of as satisfactory latrine accommodation as possible and the cleanly disposal of night-soil.

(*b*) *Ascariasis.*

141. Ascariasis is almost an universal infestation. The full force of its effects falls chiefly on the young. The malign influence of this infestation on the very young is hard to over-estimate. Its importance is stressed from all child welfare centres and from many stations.

Educational propaganda in schools clinics and in the home, the provision of sanitary latrine accommodation and night-soil disposal systems are the chief methods of control.

(*c*) *Taeniasis.*

142. This infestation is commmon throughout the Gold Coast showing its highest incidence in those localities where latrines are difficult to provide and where a lack of firewood renders the proper cooking of meat impracticable.

Such conditions are not uncommon in the Northern Territories and in parts of northern Ashanti.

The chief methods of prevention are the guarding against indiscriminate fouling of the ground by the provision of a sanitary system of latrines, the careful disposal of night-soil, the control of slaughter-houses or slaughter-slabs, and the systematic inspection of meat before issuing for sale.

(*d*) *Dracontiasis.*

143. This infestation is very rarely seen in the larger centres except in the form of an imported case. It is, however, very common in the Northern Territories and parts of Ashanti where water has to be scooped-out of shallow water-holes, swamps and even puddles in the dry season when scarcity is the rule. It is one of the most important factors when labour inefficiency is considered.

The people will indicate readily their water supply as the cause, and often refer an outbreak to the arrival of an imported case in their village with the subsequent infection of their—often only—water supply.

144. Preventive measures entirely depend on the provision of a well-protected water supply. The Ashantis, who appreciate a good water supply, if helped with advice and the provision of a skilled mason will work hard on constructing a water supply for their township or village.

(*e*) *Schistosomiasis.*

145. This infestation is less commonly treated than the other helminthic diseases. It accounted for twenty-four deaths registered during the year. It is, however, prevalent in three localities—Akuse in the Eastern Province, Oda in the Central Province and Sunyani in western Ashanti.

146. Owing to the prevalence of gonorrhœa (an almost universal disease) and possibly, also, to the low standard of "physical well-being" of many of the people this infestation is often ignored by the sufferer, and only comes to light as a result of careful examination when he seeks treatment for some other complaint.

147. Preventive methods adopted are drainage of the collections of water inhabited by the mollusc hosts (a most difficult and almost impossible consideration when applied to wide areas), the careful disposal of excreta and the treatment of those suffering from the infestation.

Animal Diseases.

148. Anthrax has never yet assumed epizootic form. The usual, few sporadic cases occurred during the period under review.

149. Rinderpest broke out in the Accra area and resulted in the loss of some 760 head of cattle.

The decisive factor in fighting the outbreak was that spleen vaccine was available. The Principal Veterinary Officer stresses the fact that isolation and segregation, only, are hopeless, and that . . . "the only real method of rinderpest eradication is by permanent immunisation."

150. Contagious bovine pleuro-pneumonia appeared in the Navrongo division and spread to Chuchilliga in February, 1934.

151. The Principal Veterinary Officer is of the opinion that rabies and suspected rabies is increasing and stresses the want of care of dog-owners in not reporting suggestive symptoms until people have been bitten.

152. Distemper is common, and most imported dogs die of this disease and not of trypanosomiasis as is the current idea.

153. The Principal Veterinary Officer reports that worm infestations were particularly high in 1933-34 owing to the unusually high rainfall. He, also, stresses the well-known fact that the "larger part of the livestock areas is untouched by sanitary activities." Cysticercus infestation is not nearly so common in cattle which are kept under range conditions by nomadic owners.

154. Considerable research work has been carried out on the bionomics of *Glossina palpalis* and *G. tachinoides* in the Naboggo valley in the vicinity of Pong Tamale during the year.

The cost of clearing some fourteen miles of river of fringing bush worked out at £2 3s. per acre, which represents slightly over a quarter of a mile of river bank.

The most common shrub requiring reclearing was Mimosa asperata whose seeds are water-borne.

155. At all large centres detailed records are kept of parasitic and pathological conditions discovered at the local slaughter-houses by officers of the Health Branch.

In Table XXVII particulars are given from the records thus kept at Kumasi, which is the distributing centre for the Colony.

TABLE XXVII.

KUMASI.

Disease.	Cattle. 2,535		Sheep. 4,876		Goats. 3,388		Pigs. 119		Totals.	
	Whole.	Parts.	Whole.	Parts.	Whole.	Parts.	Whole.	Parts.	Whole.	Parts.
Cysticercus bovis	28	89	—	—	—	—	—	—	28	89
Onchocercosis	11	36	—	—	—	—	—	—	11	36
Dropsy and emaciation ...	13	—	69	—	35	—	—	—	117	—
Emaciation and general hæmorrhagic conditions	7	—	13	—	12	—	—	—	32	—
Actinomycosis	1	—	—	—	—	—	—	—	1	—
Jaundice	15	—	44	—	20	—	—	—	79	—
Septicæmia	10	—	36	—	27	—	—	—	73	—
Pseudo-tuberculosis ...	—	—	43	104	29	77	—	—	72	181
Contagious pleuro-pneumonia	17	—	21	—	11	—	—	—	49	—
Pneumonia	15	288	37	761	31	556	—	59	83	1,664
Pleurisy	21	187	76	357	41	161	—	22	138	727
Putrefaction	1	—	—	—	—	—	—	—	1	—
Bruises and injuries ...	9	46	46	108	28	79	1	8	84	241
Liver fluke	—	525	—	1,067	—	659	—	—	—	2,251
Cirrhosis	—	243	—	340	—	181	—	—	—	764
Miliary abscesses	—	21	—	151	—	83	—	—	—	255
Emphysema	—	26	—	47	—	35	—	—	—	108
Nephritis	—	168	—	416	—	238	—	—	—	822
Total	148	1,629	385	3,351	234	2,069	1	89	885	7,138

Seasonal Prevalence of Diseases.

156. In the Gold Coast there is no very definite seasonal prevalence of disease.

The most important factor is the degree of severity of the harmattan a dry, cold, dusty wind blowing from the north during the months of January and February. In some years the influence of this wind is very marked while in others its effects may be almost negligibe.

157. In years when the harmatttan is well marked, and people huddle together for warmth and seal up every available ventilation opening, there is, invariably, a heavy increase in the number of deaths from diseases of the " pneumonia, broncho-pneumonia and bronchitis " group.

Epidemic cerebro-spinal meningitis, relapsing fever and smallpox have to be anticipated.

Malaria shows no predilection for any particular season and many of the most severe cases are seen during the dry season, probably the factor of chill plays an important part in " lighting-up " infections received during the rains when mosquitos are most prevalent.

Yellow fever may occur at any period of the year, but would appear to be more common when the rains are commencing and when they are diminishing towards their close. It can be understood, it is thought, that light rains tending to keep water-retaining objects gently filled with water must be more conducive to *Aedes* propagation than the period of " lashing " downfalls which tend to wash out rather than fill.

II—GENERAL MEASURES OF SANITATION.

(*a*) *Sewage Disposal.*

158. A water-carriage system of disposal is available only in a few institutions and bungalows, etc., as, for example, the Gold Coast Hospital, Accra, the Prince of Wales College, Achimota, the European Hospital and a few bungalows at Takoradi, and certain public latrines in Accra.

159. In all the larger centres the pail-system of latrines is in general use.

160. A few septic latrines have been installed and it is hoped to increase the number of these in the future.

For the most part the septic latrine has proved very successful in use wherever it has been tried.

Trading firms have been encouraged to instal septic systems of night-soil disposal at their bungalows.

Financial considerations have not as yet made it possible to adopt this process in Government residential areas.

161. Ony a very few of the old, insanitary " sea-latrines " are now in use and it is hoped to abandon the last of these in the near future.

162. In some seven of the larger stations fleets of lorries are in use for removing night-soil from the latrines to the disposal area. Most stations, however, have to rely on the older, primitive and most insanitary method of head-loading by prison labour.

163. In the smaller centres and villages the pit-latrine is in general use.

Such latrines may be moderately sanitary, and at their worst do concentrate the nuisance at definite points.

If well-sited, roofed, covered and provided with lidded drop-holes, fly-trapped and well screened they can be moderately sanitary, but must—to a greater or lesser degree—act as " fly-nurseries."

The " smoke " variety of the pit-latrine, once almost in general use in the Ashanti townships, is a good modification of the simpler pit-latrine.

164. Night-soil is finally disposed of in a variety of ways. The common method on the sea-board is by disposal into the sea. In some instances this process is sanitary, in others it can be a public nuisance as in Accra. In most of the larger, inland centres disposal is by trenching, plots being used in rotation and farmed while resting.

In smaller communities the night-soil is deposited into covered, roofed, screened and fly-trapped disposal-pits. In the mines disposal by incineration is coming into favour. This method is now used by three large and important companies. Sawdust and dried grass are the most common mixing media prior to the throwing of the night-soil into the furnaces.

165. Wherever possible in the newer layouts an effort is made to group all sanitary structures into " sanitary units." Such a unit consists of a male and female latrine, an incinerator and a refuse bin.

(*b*) *Refuse Disposal.*

166. In the larger centres refuse deposited in the roadside bins is taken by motor lorry to the disposal areas, in the smaller centres hand trucks for this purpose are still in use.

167. Disposal of destructible refuse in the more important places is by incineration. In Accra a two-celled, forced-draught destructor, which disposes of nearly 100 tons of refuse in the 24 hours, is in use. Elsewhere, incinerators of various patterns are employed. These may be concrete or brick-built incinerators of the " bee-hive " type, or less expensive more temporary types down to the very useful, mud-built, costless, field incinerator. These latter are usually erected in batteries in localities where the ash is required for filling purposes.

168. Indestructible refuse such as tins, bottles, old motor parts, etc., are used for filling low-lying swampy areas and given a good top-dressing of earth or incinerator ash. The disposal of bottles is now no longer a problem of any importance in the larger centres since the institution of aerated water factories as the bottles have a market value. It is not so, however, in the smaller centres and villages.

169. The roadside refuse bin in most large towns is a frank nuisance. People are too lazy to place their refuse inside, but throw it down outside in scattered heaps.

In Kumasi no street refuse bins are provided. In this centre the people, well trained in the past, carry their household refuse to the nearest incinerator where it is at once thrown-in by the labourer in charge.

Here, owing to the possibility of obtaining sanitary sites without difficulty, an ample number of well-placed incinerators are available.

170. In the small villages recourse has to be had to controlled dumping. The indestructible refuse is buried in the dumping area and, when climatic conditions allow, the combustible refuse is raked-up and burned.

171. The village incinerator once a feature in Ashanti is now not so often seen in use as formerly. The chiefs, many of whom draw revenue from a market, decline to pay the incinerator labourers' wages, the incinerators fall into disuse and disrepair, and unless the strictest watch is kept a filthy, bottle-and-tin-strewn, village perimeter results.

(*c*) *Drainage.*

172. Very little permanent drainage work has been possible during the period, but a large amount of drainage by means of earth channels and gutters has been accomplished.

173. The permanent drainage work has been carried-out chiefly in the following centres—Obuasi, Kumasi, Tamale and Takoradi.

174. Most stations report progress in the construction of earth channels and gutters.

The stations where, perhaps, most extensive drainage improvements have been made by these methods are Accra, Kumasi, Takoradi, Tamale and Tarkwa.

175. The funds available for the maintenance of existing concrete gutters have been insufficient during the last few years.

There has, therefore, been considerable deterioration of the drainage systems in such large centres as Accra, Cape Coast and Sekondi.

The inverts of concrete water channels are very liable to corrode as a result of the amount of gritty detritus carried down with the storm water and the ammoniacal nature of the liquids passing down them in the dry season.

176. The drainage work in the Onyasia valley, where Achimota is affected, has been steadily extended and these are now fourteen miles of earth channels and gutters cut.

This work, although not eradicating all mosquitos, has very materially reduced the number of anophelines caught in the College buildings and bungalows and has resulted in a definite improvement in the health of the College staff.

(*d*) *Water Supplies.*

177. The year 1933-34 has been a memorable one. The Owabi supply for Kumasi was turned on by His Honour the Chief Commissioner of Ashanti on the 29th March, 1934.

This provision will fill a long-want and will do much to safeguard the public health of this very important centre.

178. The Tamale water supply has functioned satisfactorily throughout the year, as has, also, the purification plant at the Veterinary Headquarters at Pong Tamale.

179. The Obuasi Sanitary Board has completed the water supply to the Obuasi, Nsuta and Zongo sections of the area under their control. They have, also, installed a subsidiary supply to the Wawasi section of the town.

The Ashanti Gold Fields Corporation, Obuasi, is planning the installation of filters for the supply to their staff bungalows and hospitals, and are commencing work on the relaying of the supply main.

180. In spite of financial stress the provision of village water supplies progressed steadily in Ashanti.

The work in Ashanti is done on the basis of the expert advice, a skilled mason and half the amount of cement being provided by Government, while the chiefs supply labour, half the cement required and the stone and sand.

Progress has not been so rapid as in the past for the greater amount of time and funds has had to be expended in maintaining the numerous, existing supplies.

The commonest cause of damage to existing supplies are falling trees and utter neglect on the part of the chiefs and people, who frequently fail to call attention to defects in their supplies until such have progressed almost beyond repair.

The Ashantis, generally, are anxious to have a good water supply and will still work themselves to that end.

The rural population in the Colony are for the most part quite apathetic.

181. Much important work still remains to be done. The needs of Koforidua are outstanding. Akropong, Late, Nsawam, Somanya, etc., all have claims for the future provision of water supplies, and the extension of the Cape Coast supply to Elmina and Saltpond is most desirable.

182. A considerable amount of work has been carried out throughout the mines areas with regard to the examination of existing and prospective supplies, which it is hoped will bear fruit in the future.

183. Table XXVIII, below, gives a good indication of the quality of the water delivered to Accra and the Sekondi-Takoradi area.

TABLE XXVIII.

Source.	Total number of samples.	Number without B. coli in 100 c.c.	Number with B. coli in 100 c.c. but not in 10 c.c.	Number with B. coli in 10 c.c. or less.	Percentages of samples with B. coli in 100 c.c. or less.
Storage Reservoirs and Final Filters	104	93	4	7	10.6
Distribution	53	51	1	1	3.8
Total	157	144	5	8	8.3

184. It will be noted that, of the total number of samples containing B.coli in 100 c.c. or less (13), two only were obtained from the water as finally distributed.

SEKONDI-TAKORADI

Source.	Total number of samples.	Number without B. coli in 100 c.c.	Number with B. coli in 100 c.c. but not in 10 c.c.	Number with B. coli in 10 c.c. or less.	Percentages of samples with B. coli in 100c.c. or less.
Market Tap, etc.	11	10	1	—	9.1
Water Barge	8	8	—	—	—
Harbour Area	1	—	1	—	100.0
Residential Area	7	7	—	—	—
Public Stand-pipes	37	33	2	2	5.4
Total	64	58	4	2	9.4

185. The total percentage of samples with a percentage B.coli in 100 c.c. or less of 9.4 compares favourbly with a percentage of 9.6 returned for the previous 12-monthly period.

(e) *Clearing of Bush and Undergrowth.*

186. The condition of the grass lands round and in town areas leaves, to-day, a good deal to be desired. Such areas are cleared as often as the available funds permit. This to be efficacious has to be done at least once a month during the rains.

Any overgrown condition of the perimeter of a town, or of its open spaces, is a danger of the first order.

Rank and overgrown grass or bush simply invites the deposition of bottles, tins and putrescible filth of all kinds. This nuisance is one of the biggest factors in the campaign against yellow fever. In the rains carelessly-thrown-away tins, bottles, calabashes and old motor parts, etc., in many instances retain water and act as mosquito " nurseries."

187. In most of the large centres owing to lack of funds as much of the vacant land in and around them has been given over to controlled gardening. As far as possible the crops permitted are cassada, onions and ground-nuts.

No water-retaining plants, or those likely, by reason of their height and thickness of growth to afford cover for refuse, are permitted.

188. During the greater part of the year the cutlass is used in grass clearing, but in the dry season—particularly in residential areas—the hoe is substituted for the cutlass and " elephant " and " spear " grass is eradicated as far as is possible.

In many centres dhub grass is planted steadily year by year. This process though slow is very valuable as areas so planted give little future trouble.

189. In several centres, notably in Kumasi and Tarkwa, steady progress has been made in thinning-out obstructive trees.

The water-retaining rot-holes and forks of trees—particularly the flamboyants and small cassias—are a constant source of anxiety and require continual watchfulness and care.

In the Firewood Reserve near Achimota College a lot of trouble has resulted from the " forking " of the young cassias and from rot-holes in the stumps of felled trees. Water retention in these has necessitated the filling of thousands of holes with " tar-sand " cement.

The abandoned Sisal Plantation, Accra, has given much trouble as a result of mosquito-breeding in water retained in the large boat-shaped leaves. Nothing has been found possible yet to ameliorate this nuisance. The eradication of this plantation is beyond the labour means of the Health Branch and the nuisance increases yearly.

(f) *Domiciliary Visiting and Inspections.*

190. Domiciliary visiting forms one of the most important functions of the Health Branch and is a duty undertaken by practically every officer of all grades. The standard aimed at is the inspection of all premises every seven to ten days, i.e. within the average life-cycle of the most important domestic mosquito—*Aedes aegypti*.

This standard cannot be attained in many of the smaller centres, but it can safely be said to be reached in the towns of first-class importance.

191. As careful a watch as possible is kept on the smaller towns and larger villages on important trade routes in suspected " endemic " areas of yellow fever. It is, of course, difficult to define such areas and they may be taken to represent those in which most trouble has occurred in the past.

192. The majority of the smaller rural towns and villages are, of a necessity, not subjected to regular house-to-house inspections.

Where such occupy strategic positions this lack of control gives rise to no little anxiety.

193. Details of the results of the inspections carried out during 1934-35 in six of the most important centres are given in Table XXX.

TABLE XXX.

	Convictions for mosquito larvæ.	Fines for larvæ.	Convictions for insanitary conditions.	Fines for insanitary conditions.
		£ s. d.		£ s. d.
Accra	336	219 13 0	2,262	477 18 0
Koforidua	462	145 4 6	1,920	431 14 0
Cape Coast	119	66 15 0	351	72 15 0
Sekondi	86	43 8 0	584	172 1 6
Kumasi	284	70 8 6	1,920	377 16 6
Tamale	148	13 12 6	204	10 17 6
Total	1,435	559 1 6	7,241	1,543 2 6

194. When the results of the year's domiciliary visiting for the whole of the Gold Coast is considered the total of £1,999 3s. 6d. was collected as fines in 6,896 convictions for mosquito larvae.

195. In 28,117 convictions for insanitary conditions the total of the fines which resulted reached the figure of £5,189 1s. 0d.

Domiciliary visiting was, also, carried out during the year by the staffs of the infant welfare centres, and the Red Cross Sisters attached to the Cape Coast and Sekondi centres participated in the work. Mention must also be made of the valuable educative activities carried out in the homes of the people by voluntary workers of the Gold Coast League for Maternal and Child Welfare Section, Gold Coast Branch, British Red Cross Society.

(g) *Offensive Trades.*

196. Offensive trades do not call for much comment. Hide curing on a very small scale occurs at one or two centres. The control of this activity—which is not extensive enough to be called a trade—has presented no difficulty up to the present.

197. Fish curing, which is carried out to a large extent in many of the seaboard towns, may be very offensive. Efforts are made, wherever possible, to concentrate this trade to certain plots well removed from and to leeward of dwellings. When carried out in the compounds of houses the process may be very obnoxious.

Frequently fish, imcompletely cured on the coast and sent inland for sale, is subjected to a second curing process when putrefaction sets in. The resulting nuisance may be noisome in the extreme and requires careful control.

198. In some centres in Ashanti and Northern Territories the dyeing industry requires controlling. It is not extensive and all that is required is the limitation of the process to certain defined areas chiefly for facilities of inspection.

III—SCHOOL HYGIENE.

199. Owing to staff shortage the routine inspection of school children—an important branch of the activities of the preventive side of the Department—has almost fallen into abeyance.

An effort is, however, being made to re-establish contact with the schools as far as the present shortage of officers will permit.

200. In Kumasi, where the work has still been carried on, the following leading observations of the Medical Officer of Health of that town are of interest :—

" *Spleen Index.*—The drop in the index (spleen) between the third (8-12 years) and fourth (12-16 years) age groups is noteworthy, i.e. from 28 to 16.5 per centum.

" *Vaccination.*—Eighty-three per centum of the children examined had evidence of previous vaccination.

" *Teeth.*—Dental caries and pyorrhoea were by no means uncommon particularly in the age group 5-12 years.

" Beyond the age of 12 and particularly over 16 the teeth were remarkably good on the whole. There was definite evidence of a lack of attention to the hygiene of the mouth in those under 12 years.

" The enamel of the teeth in many of such cases was defective and could easily be broken off.

" *Nutrition*.—Only a very small percentage showed defective nutrition."

The above observations were based on the careful examination of 1,417 school children.

201. Any advance in school hygiene in such times is difficult to attain, but it can safely be stated that in the larger centres the standard of the last two years has been maintained.

Cases of overcrowding are reported from time to time, particularly with regard to non-assisted schools. Such cases are dealt with, when they come to light, under the relevant section of the Towns Ordinance.

Considerable inconvenience in control results owing to the rapidity with which such non-assisted schools can be moved from one district of a town to another.

202. The chief complaint received in connection with rural schools was usually with reference to unsatisfactory latrine accommodation.

203. In Table XXXI the results of examination for splenic enlargements are given.

TABLE XXXI.

Locality.	Number of children examined.	Percentage with enlarged spleens.
Cape Coast	338	29.25
Kumasi	1,417	23.50
Takoradi	112	20.00
Accra	1,588	19.60

There is a wide variation in the splenic index in the various age groups, which can be taken, it is thought, to indicate an increasing " tolerance " to the disease.

To illustrate this point the following figures from Kumasi can be quoted.

SPLEEN INDEX.

Under 5 years	52.0
5-8 years	30.5
8-12 years	28.0
12-16 years	16.5
Over 16 years	9.8

(IV) LABOUR CONDITIONS.

204. During the year 2,873 deck passengers and immigrant labourers landed at Accra as compared with 3,260 for the previous year. The figures for Takoradi were 1,391 as compared with 1,092 for 1932-33.

205. There was no indication that immigration over the land frontiers of the Gold Coast has decreased to any extent. In fact, all the evidence pointed to a decided increase. At the end of the 1933 season the influx southwards to Kumasi showed no diminution, but continued unabated up to the end of March, 1934. The reasons for this continued stream of immigration was hard to understand. The immigrants' own explanations were . . . " unabated taxation," " conscription " and " lack of trading facilities."

206. Such immigrant labour is usually absorbed as follows :—

(*a*) In doing odd, labouring jobs in and around the large centres, working for contractors, etc.

(*b*) In connection with the mining industry.

(*c*) As labour in the " farms " in rural areas. Such labour, as a rule, is paid partly in kind and partly in money, the money portion of their wages often remaining unpaid.

207. Wages remain much on the same level as in the last twelve-monthly period.

Unemployment is common. Labourers still in employment look after and feed their less fortunate " brethren." This humane practice, however, cuts both ways and the donor suffers almost to the same degree as the recipient. House and room rents are still too high, but for good premises the would-be hirer has now a certain amount of bargaining power. Labourers are more and more tending to adopt a communal type of living, feeding in messes and crowding into rooms until filled to their utmost capacity. Overcrowding is rife.

208. The cost of locally-grown foodstuffs has fallen, but not commensurately with the fall in wages coupled with the extra burden of out-of-work fellow countrymen.

209. During 1933-34, twenty-one deaths were registered as due to starvation as compared with thirty-one in 1932-33.

210. Considerable sympathy must be felt for individuals of the clerical class for those in employment find a growing burden of out-of-work relatives falling on their shoulders who, in acccordance with family custom, must be assisted. The outcome is all too frequently the additional load of debt.

211. In Kumasi for several years past a scheme of relief has been running with success. This comprises the accommodation of weakly, indigent labourers and feeding them until they find work and are able to fend themselves. Recently such a scheme has, also, been instituted at Tamale with good results.

(V) HOUSING AND TOWN-PLANNING.

212. Somewhat conflicting evidence exists with reference to building activities in the larger centres. In Accra eighteen buildings were completed as against twenty-one during 1932-33. Koforidua returned thirty completed as against forty-four for last year. In Cape Coast fifteen were completed as against seventeen in 1932-33.

In Kumasi building permits for premises valued at £31,903 were issued as against some £20,000 for last year.

213. The medical officer of health, Takoradi, reports that while there are excellent houses in the African Township and Upper Takoradi, in the North-West Block, where the poorer classes live, not more than 20 per centum of the houses have been completed. Many are not built according to plan, but most have been inhabited for some years.

214. On the whole it may safely be stated that the present period of financial stress has not affected the erection of good class dwellings to the extent anticipated.

215. The people thoroughly appreciate a substantially built, sanitary dwelling and are, apparently, quite prepared to wait until funds are available to erect a sound house in cement block in preference to building in inferior material. In most instances their houses represent savings, so that there is often a delay of some years before completion, for comparatively few have the funds when a building has been started to carry it straight through to completion without a series of halts in the process.

216. The extension of existing layouts has been a feature of 1933-34, and many new layouts have been put in hand and several completed. New layouts for the most part have been in connection with rapidly growing townships connected with the mining industry.

217. Villages layouts, and building on layouts previously completed, to a great extent have remained in abeyance. Little new work has been attempted and the efforts of the Health Branch have been largely employed in stimulating the

completion of work already started. Even in Ashanti, where so much activity has been shown in former years, little has been accomplished. The Ashantis, however, appreciate the value of a sound house built on a layout, and it is thought that progress will revive on the return of a measure of prosperity.

(VI) SANITATION IN THE MINES AREAS.

218. During 1933-34 a senior health officer has been available for regular travelling in the mines areas. Steady contact has been re-established between the Health Branch and this important industry.

219. A good deal of uncertainty has existed as a result of the opening up of old properties, and considerable anxiety has been felt for the well-being of small, scattered, European, mining communities.

220. Several of the older well-established properties have changed hands and alteration of previous policy with regard both to underground and surface development has made progress slow. Considerable advancement along general, sanitary lines has, however, been made.

221. The death-rate *per mille* from all causes for the total labour force employed in the industry (16,453 men) was returned as 9.1 for 1933-34 as compared with 11.5 for 1932-33.

(VII) RURAL SANITATION.

222. During the last few years rural sanitation has uffered adversely to no small degree. This is particularly evident in Ashanti where the standard was, and is, considerably higher than in the Colony generally.

223. When money was plentiful the chiefs and people were quite ready to hire labour for latrine building, grass and bush clearing and, in the larger villages, for working the incinerators. Now money is scarce in the rural areas and the work devolves on the people themselves. It is with the very greatest difficulty that anything can be accomplished, and is too often impossible. As a result overgrown, tin, bottle and rubbish-littered perimeters have appeared and many villages and small townships, and latrines have fallen into ruin and disuse. Where such conditions arise on busy trade routes anxiety has been felt. The isolated bush village is not the important factor that is the township or large village situated on a busy, all-weather trade route. The whole question of rural sanitation is at present under the consideration of Government.

(VIII) FOOD IN RELATION TO HEALTH AND DISEASE.

1.—Markets.

224. Although little new market construction can be reported the sanitary standard of the markets in the larger centres has well been maintained.

225. In some centres it has been found difficult to fix the rates of the stall rents.

When these are too high a great increase in the number of hawkers results and stalls in the market stand tenantless. There is no more unstisfactory method of vending foodstuffs than by hawking.

If a market is adequate, well sited, organised and economic rents are charged, it is not as a rule difficult to control the number of street hawkers.

226. It is sometimes not recognised that a market for a small centre need not be elaborate and that an expensive type of shed is not essential; also, that a market is a valuable source of revenue which should, it is considered, be earmarked for market maintenance, extension and sanitary improvement of the town.

227. All the larger, more important centres have fly-proofed market sheds where meat is sold. In the smaller places fly-proof cages are usually in use. A fly-prooted market shed has been constructed at Navrongo by the Native Authority and another is contemplated at Bole, both in the Northern Territories.

228. All markets in the Northern Territorries are now controlled, and the revenue collected, by the various Native Authorities.

229. One or two of the larger centres in the Colony have provided fly-proofed sheds for bread-sellers.

2.—Slaughter-houses.

230. Most of the larger centres have satisfactory, well controlled slaughter-houses with hanging accommodation and the provision of sanitary means for the disposals of offal. The smaller centres depend largely on graded, concrete slaughter-slabs.

231. Before the meat is issued for sale it is carefully inspected by officers of the Animal Health Department or Health Branch of the Medical Department. Records are kept of all condemnations and the pathological conditions necessitating this measure.

3.—Cattle Sheds.

232. No cattle sheds are in existence except at the headquarters of the Animal Health Department at Pong Tamale.

4.—Dairies.

233. At present no dairies are in existence in the Gold Coast.

5.—Aerated Water Factories.

234. In the larger centres regulations are in force for the control of aerated water factories. They are regularly inspected and their products are subjected to periodic bacteriological examination. If they fail to reach the standard of no Bacillus coli in 100 c.c. they are closed down until such time as the plant is thoroughly over-hauled and the water meets requirements.

6.—Restaurants and Eating Shops.

235. In all the larger centres restaurants and eating shops are subjected to regular inspection, and cleanliness is insisted on with regard to food storage, the cooking of the food and the condition of the eating utensils. In some centres special licences are required and, before these granted to an applicant, he is required to bring his premises up to date and render it thoroughly sanitary.

7.—Bakeries.

236. In some of the larger centres bakeries are licensed, and this lever is used to insist on the institution of proper methods of storing and baking. Without some such safeguard an insanitary bedroom is usually the scene of all processes of bread-making save that of firing.

8.—Food Inspection.

237. Markets and stores are regularly visited and all food products offered for sale submitted to close inspection. The food giving rise to most condemnations are tinned meats and fish, milk, smoked-fish and pork barrelled in brine. As a rule no difficulty is experienced even with large condemnations. Importers often surrender unsound articles voluntarily and ask for condemnation, removal and the issue of a certificate to that effect.

(*a*) *Deficiency Diseases.*

238. Although the diet of the people cannot be considered well balanced and lacks protein, animal fat and fresh fruit, deficiency diseases do not figure to any great extent in the mortality and morbidity returns. The outstanding factor in the mortality returns is the preponderance of disease of the respiratory tract which would indicate a definite deficiency in the Vitamin A constituent.

239. It is likely that food deficiency plays a not unimportant part in the production of common, non-specific ulcer.

240. Dental caries cannot, it is thought, be considered as unduly prevalent. Pyorrhoea and a spongy condition of the gums—not uncommonly seen even at an early age—are not at all unusual.

241. Rickets, beri-beri and scurvy cannot be considered common. During the year three and one deaths, respectively, were registered as due to beri-beri and scurvy. No death was registered as resulting from rickets.

242. Dr. C. D. Williams, woman medical officer, published in the Annual Report of 1931-32 an account of a series of cases of avitaminosis producing a high mortality in children affected. The suggestion has since been made that these are cases of pellagra. There can be little doubt but a deficient dietary is responsible for a good deal of trouble in the early years of life. This is well known in the Colony, and the condition described by Dr. Williams is known locally, as " kwashiorkor " or " the disease the elder child gets when the next is born." The disease in children is easily prevented by appropriate diet.

(*b*) *The Work of the Missions.*

243. The Roman Catholic Mission has continued its useful work at the Kpandu (Togoland) infant welfare centre health, education and propaganda forming an integral part of the activities of the Sisters. At Eikwe (Western Province) work has, also, been carried on throughout the year.

244. The institution of new centres at Asankrangwa (Western Province), Djodzie (Eastern Province) and Oda (Central Province), it is believed, is intended in the future.

245. The work of the White Fathers at Navrongo (Northern Territories) among the lepers has been referred to previously.

246. Excluding the more spectacular, curative work at established treatment centres a vast field lies open to the missions in health education and propaganda, in stimulating interest in health matters and raising the general standard of living which in the rural areas in particular is deplorably low.

247. Nothing could possibly be more depressing and degrading than life during the rains in an insanitary, overgrown village comprised of huddled-together, semi-ruinous hovels. Such a description briefly represents existing conditions in the majority of the rural hamlets. The infantile mortality under such conditions can only be guessed at, but it must be in the region of a full third of all children born. Curative work, only, can never reduce, materially, this wastage of young life.

248. Under the aegis of the missions much sound educative work is being done and, here and there, excellent examples of cleanliness are shown to the people, but it is thought that much still remains to be undertaken to bring home to the people the value of all-round cleanliness and its far-reaching effects in the prevention of disease.

(*c*) *Measures taken to spread knowledge of Hygiene and Health.*

TRAINING OF HEALTH PERSONNEL.

249. For the past two years the training school for sanitary inspectors at Accra has almost ceased to function. An increase of ten in the cadre of sanitary inspectors-in-training, generously allowed for by Government for 1934-35, will enable the school to recommence its activities.

250. The training of village overseers at Kumasi has continued throughout the year.

251. At Accra, Cape Coast, Sekondi and Kumasi the respective Town Councils train their municipal inspectors. Of recent years there has been no lack of candidates who seek unpaid employment with the Town Councils in the hope of appointment to salaried posts when such fall vacant.

GENERAL HEALTH EDUCATION.

252. All officers of the Health Branch of every grade continually endeavour to bring home to the people the benefits to be derived by improvements in general environmental sanitation. In most centres " Health Weeks " or " Health Days " were held, and " Baby Shows " proved valuable methods of propaganda.

The educative work of the child welfare centres has been considerably increased during the year and the attendance at district weighing centres has showed a most promising rise. In Accra the number of these attendances has risen from 6,313 in 1932-33 to 20,551 during the period under review.

254. The staffs of the child welfare centres took a large share in the dissemination of health knowledge.

The posting of European nursing sisters with special training in welfare work to these institutions has proved of the greatest value in the outside preventive and educative work.

255. The Honourable Director of Education has generously published a series of articles directly bearing on health education in the excellent *Teachers' Journal* which enjoys a wide circulation throughout the country.

256. The Gold Coast Branch of the British Red Cross Society, particularly through the Junior Links, is playing an increasing part in the propaganda of health knowledge. It is thought in the future that this Society will prove the medium best adapted for getting into touch with the people on subjects advancing the growth of public health knowledge.

257. The Gold Coast League for Maternal and Child Welfare Section, Gold Coast Branch, British Red Cross Society, has continued its good work throughout the year. The ladies of this League are always willing to help in any of the numerous branches of prevention and propagation of health knowledge, the collection of funds for any good cause and the supply of comforts to the inhabitants of the leper colonies. Their work has been of very great value.

258. Many of the senior schools and colleges throughout the Gold Coast undertake health visiting and general social service activities in the surrounding villages

(*d*) *Recommendations for Future Work.*

259. Under the present conditions of financial stress it is difficult to make recommendations for the future.

It is considered, however, that the following points can be stressed :—

(*a*) The provision of funds for 1935-36 to maintain existing sanitary structures, concrete drains, etc., in proper repair.

(*b*) The extension of public health propaganda and education among the people, generally.

(*c*) The placing of legislation, bearing on rural and township sanitation, on a sure basis permitting of steady progress in such areas in the future.

W. M. HOWELLS,
Acting Deputy Director,
Health Service.

IV.—PORT HEALTH ADMINISTRATION.

260. During 1933-34 no Gold Coast port was declared infected.

261. No plague-infected rat was found at any of the Gold Coast ports.

262. Port health work is carried out at the following ports : Accra, Ada, Axim, Cape Coast, Half Assini, Keta, Saltpond, Takoradi and Winneba.

263. Ships to the number of 502 (2,452,678 total tonnage) entered the port of Takoradi during the year as compared with a total of 406 for 1932-33. No " infected " or " suspected " ship had to be dealt with. Ships to the number of seventy-five were defective and these defects were remedied. Most of the defective ships were Greek, French or Italian and were generally filthy.

264. The water barge supplied 2,350,601 gallons of water to shipping during the year. All the water samples taken from the barge and subjected to bacteriological analysis proved satisfactory.

265. Third class and deck passengers to the number of 1,391 were landed and appropriately dealt with as compared with a total of 1,092 during 1932-33. Two cases of chicken-pox were landed during 1933-34.

266. At Accra 2,873 deck passengers and Kroo immigrants were landed and dealt with. This total is 387 less than that for the previous year.

V.—MATERNITY AND CHILD WELFARE.

267. The attendances at the various clinics during 1933-34 are given in the following table :—

TABLE XXXII.

ATTENDANCES AT CLINICS 1933-34.

	Attendances.			
	Children.		Expectant Mothers.	
	1932–34.	1933–34.	1932–33.	1933–34.
Accra	25,655	17,189	1,237	749
Cape Coast	4,632	10,844	1,976	2,687
Sekondi	4,718	7,104	2,758	2,631
Shama	761	1,024	—	—
Koforidua	17,008	18,177	3,589	4,442
Kumasi	21,543	19,822	9,266	8,364
Total	74,317	74,160	18,826	18,873

268. Valuable work has, also, been carried out at many stations where small clinics have been established by medical officers in conjunction with their dispensaries. It must be borne in mind that these figures are not included in the list in the preceding paragraph.

269. The Gold Coast Branch, British Red Cross Society, continued to manage the Cape Coast and Sekondi welfare centres under the supervision of the local medical officers of health. These centres did excellent work as in the previous 12-monthly period. A wide future would appear to lie before the Society in the continuation and extension of this valuable side of their field of activities.

270. The help of the missions in maternal and child welfare has been mentioned in a previous paragraph.

271. The Accra, Princess Marie Louise Hospital, and Kumasi centres, where bed accommodation is provided, returned the following totals of admissions for the year :—

TABLE XXXIII.

	1931–32.	1932–33.	1933–34.
Accra, Princess Marie Louise Hospital and Centre ...	589	551	655
Kumasi Welfare Centre	668	637	515

272. The provision of a maternity hospital at Kumasi is an urgent necessity for the future.

VI.—HOSPITALS DISPENSARIES AND VENEREAL CLINICS.

273. A list of hospitals, welfare centres and other medical institutions is given in Appendix I to this report.

274. Return D appended hereto contains a summary of all cases, both in- and out-patients, treated at all hospitals and welfare centres in the Gold Coast and its dependencies and of all deaths occurring in such institutions.

275. The following figures afford a means of comparison for the past four years :—

TABLE XXXIV.

PATIENTS TREATED.

Year.	Remaining in hospital.	Total cases treated in and out-patients.	Percentage increase or decrease on previous year.	Deaths.	Remaining in hospital.	Number of deaths per thousand of the patients treated.
1930–31 ...	965	270,785	+8.7	1,327	950	4.9
1931–32 ...	950	259,067	—4.3	1,409	935	5.4
1932–33 ...	935	240,056	—7.3	1,434	1,390	5.9
1933–34 ...	1,349	250,827	+4.5	1,634	1,420	6.5

276. It should be noted that the figures for the asylum are included in those for 1933-34 and that the discrepancy between the totals of those remaining in 1932-33 and those of 1933-34 is due to a small error in the compilation of the former.

277. It will be seen that not only are the total number of deaths greater than in the previous year but that the number of deaths in-patients per thousand treated has risen appreciably. Possible factors include shortage of staff ; but it is by no means improbable that the debilitating effect of insufficient food and lack of variety of diet owing to the depressed financial condition of the bulk of the people may have a definite bearing on the matter.

278. As will be seen from Table XXXV given below there was a slight increase in the number of Europeans treated in the three largest townships in the Gold Coast but a small drop in the number of African in-patients dealt with in 1933-34.

TABLE XXXV.

AFRICAN AND EUROPEAN (IN-PATIENTS).

Station.	1930–31.		1931–32.		1932–33.		1933–34.	
	Europeans.	Africans.	Europeans.	Africans.	Europeans.	Africans.	Europeans.	Africans.
Accra	310	3,572	273	3,645	236	3,349	251	3,020
Sekondi	161	1,157	250	1,075	149	1,115	230	1,450
Kumasi	173	2,360	166	1,954	146	2,334	131	2,204
Total	644	7,089	689	6,674	531	6,798	612	6,674

279. The average cost per patient including diets, provisions, fuel and light, medical comforts and kitchen staff is shewn below.

TABLE XXXVI.

COST PER PATIENT.

	1929–30.	1930–31.	1931–32.	1932–33.	1933–34.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*
EUROPEAN HOSPITALS (Accra, Axim, Cape Coast, Kumasi, Sekondi, Tamale Winneba) average cost ...	5 5	5 0¼	4 4	5 1¾	4 6
AFRICAN HOSPTALS. (Gold Coast Hospital, Accra, Axim, Cape Coast, Koforidua, Kumasi Saltpond, Sekondi, Tamale, Winneba) average cost ...	1 2	1 1½	0 7½	0 7½	0 7

280. Owing to the financial position it was not possible to effect any important additions or alterations to either European or African hospitals during the year with the exception of the African Hospital at Keta which it will be recalled was almost completely destroyed by the sea. Here a site was selected for a new building and it is hoped that the new hospital of thirty-four beds will be completed by October, 1934

Accra.

281. Excellent work continued to be done at the Gold Coast Hospital, Accra, where there was a very slight increase in the total number of patients seen but a very distinct increase in the number of both major and minor operations. Table XXXVII contains the necessary details.

TABLE XXXVII.

Work done at Gold Coast Hospital, Accra.

	1930–31.	1931–32.	1932–33.	1933–34.
Total out-patients	14,191	13,261	13,137	13,473
Total in-patients	3,572	3,645	3,349	3,020
Major operations	650	675	560	704
Minor operations	670	709	466	753
Daily average in-patients	222	223	218	227

282. The ten-year old X-Ray plant which had given a certain amount of trouble latterly from the failure of the insulation, was the scene of what might have been a tragic accident towards the end of 1933-34 and had to be replaced with a new, up-to-date and thoroughly safe apparatus. The X-Ray Department functioned very satisfactorily and carried out large numbers of investigations and treatments.

283. The number of persons attending the Venereal Diseases Clinic at the Gold Coast Hospital continued to increase during the year. Further details are given on pages 46 and 47.

Kumasi.

284. The attendances of out-patients at the Kumasi African hospital again fell during 1933-34 as may be seen from the following figures :—

TABLE XXXVIII.

	1930–31.	1931–32.	1932–33.	1933–34.
Out-patients—total	20,881	17,804	13,927	13,645
In-patients—total	2,360	1,954	2,334	2,204
Surgical operations, major	206	229	180	190
Surgical operations, minor	282	382	381	448
Average daily number in hospital	138	134	140	115

285. There was also a falling off in the number of in-patients. There are two possible explanations. Firstly, would-be patients living in up-country districts no longer have the means to pay for transport into Kumasi owing to the very decided drop in profits from cocoa growing and the all-round fall in the price obtained for agricultural products. Secondly, a number of private medical practitioners have opened dispensaries in and around Kumasi and so have relieved the hospital of a proportion of its patients. This second cause is to be welcomed for it results in medical officers having more time to devote to individual patients and to be in a happy position of not having to turn away patients who really need in-patient treatment and nursing.

286. It is possible, further, that a certain number of persons with minor conditions who used to spend money on medical services now regard these—just as they do litigation—much more in the light of a luxury not to be indulged in when times are hard.

287. The X-Ray apparatus presented by the Ashanti division of the Gold Coast Central Council Branch, British Red Cross Society, continued to give excellent service.

Out-stations.

288. No further comments need be made on the work of Government hospitals during the year other than that efforts will be made in 1934-35 to persuade mining interests to participate in a group hospital scheme for Europeans and Africans in the Tarkwa area, with adequate X-Ray facilities for the investigation of silicosis and tuberculosis amongst mine employees. The existing Government hospital at Tarkwa is suitable for a small " bush " township but is not adequate for the problems met with in this busy mining centre.

Travelling Dispensaries.

289. Owing to the reduction in funds available for medical services, the travelling dispensaries ceased to function during the year.

Nurse-Dispensers' Scheme.

290. Altered economic conditions have compelled a reorientation of ideas with regard to the scheme usually described as the Nurse-Dispensers' Scheme.

291. The drain on the general nursing staff caused by the endeavour to maintain the numerical strength called for under this scheme became so serious that it was not possible to staff hospitals adequately, and to provide reliefs for those going on leave. There is every hope, however, of the original scheme being kept alive although modified to a considerable extent to accord with altered conditions.

292. Senior dispensers have had to take charge of certain rural areas during the year owing to shortage of staff.

293. Dispensaries at Bekwai, Enchi, Kete Krachi, Lawra, Mpreaso and Salaga are among those which have had to be operated by dispensers for comparatively long periods under occasional supervision from medical officers.

294. There can be no gain-saying the fact that rural dispensaries in charge of dispensers trained also in nursing duties and subjected to periodical—preferably weekly—guidance of the district medical officer, fill a very much needed want. Once the dispensers have obtained the confidence of the people by simple forms of treatment, there can be no doubt but that they will be in a position to influence their patients to live more hygienic lives and to take their share in sanitating their homes and surroundings. For this reason alone, it would be disastrous if the scheme came to an end.

295. It is hoped that several officers will pass their final examination for a druggist's licence during 1934-35 and that some of them at least will be available for duties of a nurse-dispenser.

296. So far, the response from chiefs with regard to the building of village dispensaries and quarters for the nurse-dispensers has been disappointing. There is some hope of village dispensaries being built at Jirapa and Walewale in the Northern Territories and at Yankumasi in the Central Province of the Colony, whilst it may be found practicable in 1934-35 to convert buildings at Kpandu and Peki in the British Sphere of Southern Togoland and Trans-Volta District respectively.

Government Medical Scholarship.

The grant of a Government medical scholarship was made to a promising student at Achimota College during the year.

Mission Hospitals and Dispensaries.

298. The missions are taking a more active part in medical work in the Colony and every possible encouragement is given both in the form of small grants-in-aid and in the free issue of drugs and dressings to various centres.

Agona.

299. The headquarters of the Seventh Day Adventists Mission in Ashanti have been moved from Agona to Bekwai but a small amount of what really amounts to first-aid work continues to be done.

Agogo.

300. Although situated in a somewhat sparsely populated district and at some distance from the railway, the Basel Mission hospital at Agogo in Ashanti serves a useful purpose and is acquiring a good reputation for a high standard of work.

Jirapa.

301. Assisted with simple drugs and dressings the mission Fathers at Jirapa give a certain amount of medical aid to the surrounding population.

Kpandu.

302. Sisters of the Roman Catholic Mission carry on welfare work at Kpandu and in neighbouring villages. Government made a grant-in-aid to the mission to assist in this work and the medical officer at Ho, who visits Kpandu once or twice each month, provides technical guidance and a quantity of drugs and dressings.

Mampong.

303. Advantage has been taken of the presence of a woman doctor connected with the English Church Mission at Mampong in Ashanti to extend medical work in this district. The doctor receives a furnished bungalow, an honorarium and a supply of drugs and dressings for the treatment of Africans over a large area in the Mampong District including the students and staff at the local Trade School. Recently, the Native Administration has constructed a temporary dispensary in Mampong township for the use of the doctor.

Navrongo.

304. Now that there is a fully-equipped and staffed Government hospital at Navrongo in the Northern Territories, the need for a clinic operated by the White Fathers no longer arises. The mission has, however, started work in a portion of the district which cannot yet be reached by the medical officer stationed at Navrongo and a small quantity of medicaments are supplied to them.

Oeikwe.

305. The Roman Catholic Mission employs trained sisters in Oeikwe near Axim in the Western Province of the Colony. A Government medical officer from Axim visits the welfare centre from time to time and assists with drugs and dressings. Arrangements have been made for a small Government grant-in-aid to be given to the mission for this work provided that it proceeds along approved lines.

306. Similar grants-in-aid have been arranged for medical work which the Roman Catholic Mission proposes to undertake in 1934-35, at Akim Swedru, Asankrangwa and Djodji in the Central, Western and Eastern Provinces of the Colony.

REPORT ON THE WORK OF THE DENTAL CLINIC, ACCRA, 1933-34.

307. Staff :—

(*a*) European—One Dental Surgeon ;

(*b*) African—One African Mechanic Improver.

Visits to other Centres.—In addition to the work carried out at Accra periodical visits were paid to Kumasi and Sekondi.

Statistics.—Comparative tables of patients treated in last three years :—

TABLE XXXIX.

RECORD OF WORK DONE.

	1931–32.	1932–33.	1933–34.
Officials (*a*) European	523	407	435
(*b*) African	2,387	3,086	1,981
Non-officials (*a*) European	455	517	371
(*b*) African	398	426	285
Total number of cases treated	3,763	4,436	3,072

W. H. DONALD

Dental Surgeon.

VENEREAL DISEASES CLINIC, ACCRA, 1933-34.

One African Medical Officer.

308. Staff :—

TABLE XL.

Disease.	New cases		Total number of cases receiving treatment.	
	M.	F.	M.	F.
Urethritis	437	30	863	51
Prostatitis...	18	—	35	—
Epididymitis	7	—	13	—
Orchitis	31	—	52	—
Arthritis	114	34	214	59
Stricture	29	—	50	—
Cervicitis	—	107	—	238
Salpingitis...	—	4	—	6
Cystitis	1	17	4	18
Buboes	27	—	47	—
Syphilis, prim.	44	—	78	—
Syphilis, sec.	7	2	19	5
Syphilis, tert.	3	9	5	24
Syphilis, cong.	—	—	—	—
Soft chancre	49	—	69	—
Odd cases	14	31	26	34
Non-venereal	30	19	41	26
Total	811	253	1,516	461

309. Total number of new cases (male) 811
Total number of new cases (female) 253
Total number of cases receiving treatment (male) 1,516
Total number of cases receiving treatment (female) 461
Total number of new cases 1,064
Total number of cases receiving treatment 1,977
Total number of new cases and cases receiving treatment ... 3,041
Total number of male irrigations 10,111
Total number of female irrigations and douchings 4,559
Total number of male and female irrigations 14,670

310. Microscopic examination of smears :—

TABLE XLI.

	Gonococci seen.	No onococci seen.
Urethral smears (male)	239	203
Urethral smears (female)	4	178
Prostatic smears	1	10
Cervical smears	14	177

311. Blood (Wassermann Serum Test) :—

TABLE XLII.

Reaction.	Male.	Female.
Positive	60	18
Negative	24	26
Anti-complementary	2	1

312. Drugs used in treatment with respective number of injections :—

TABLE XLIII.

N.A.B.	283
B.S.T.	241
Intramine	142
Sulpharsenol	81
G.C. Vaccine	44
Ant. Tart.	23
Contramine	21
T.A.B. Vaccine	2
Ametox	2

C. J. S. O. TAYLOR,

African Medical Officer i/c Venereal Clinic.

VII—PRISONS AND ASYLUMS.

(a) Prisons.

The information in this report was kindly furnished by the Director of Prisons.

313. The prisons of the Gold Coast administered by the Prison Department consist of four convict prisons and twenty-one local prisons. The convict prisons are situated at Accra, Sekondi, Kumasi and Tamale and in these prisons all long-sentenced prisoners are confined.

314. The local prisons are situated at various district headquarters throughout the country and accommodate all prisoners with sentences of six months and under. These vary greatly in type of construction and capacity; Cape Coast, Tarkwa and Obuasi prisons are well laid-out buildings with a maximum accommodation of 80 prisoners whilst six prisons situated in the more remote districts in the Northern Territories are *adobe* buildings with a maximum accommodation of from ten to fifteen prisoners.

315. There are infirmaries at the four convict prisons and a special ward at Elmina where tuberculous prisoners are segregated. There is separate accommodation for females at Accra, Elmina, Kumasi, Keta and Tamale.

316. In all prisons, prisoners sleep in association cells. In the more modern prisons the cells are mostly small accommodating three prisoners each. In the local prisons, as a rule, the cells are larger and accommodate from ten to twenty prisoners. There are single cells at most prisons which allow for segregation either for medical reasons or for the purpose of punishment.

317. Long-sentenced prisoners are employed at various trades in the convict prisons. Short-sentenced prisoners are chiefly employed on extramural work such as farming, conservancy and general station work. The hours of labour are from 6 a.m. to 11 a.m. and from 12.30 p.m. to 3.30 p.m.

318. All prisons are regularly visited by Government medical officers. Half-yearly medical reports disclose a satisfactory state of affairs at all prisons with the exception of Keta Prison which has suffered from overcrowding. It is hoped that if committals still remain high this year extra cells will be built to relieve the situation.

319. A considerable amount of malaria was prevalent amongst the European and African staff and the prisoners at the Central Prison at Sekondi. The prison is very low-lying and mosquito breeding occurred in consequence. Steps have been taken to mitigate this nuisance and it is hoped that there will be no recurrence of malaria this next wet season.

320. Minor improvements such as improved ventilation, improved kitchen arrangements and latrine accommodation have been carried out at various prisons.

321. Exclusive of executions there were forty-three deaths or 21.7 per thousand an increase of 4.5 on the previous year. In most cases the diseases causing death were contracted before admission.

322. The daily average on the sick list was 50.4 or 2.6 per cent as compared with 2.1 per cent in 1932-33 out of a total daily population of 1,985. There were no epidemics. The chief ailments were guinea-worm, ulcers, malaria and gonorrhoea. Generally speaking, the highest rates of unfits occur in the prisons in towns on the coast; those admitted to inland prisons seem healthier. This is attributed to two causes: (*a*) that weaklings and those suffering from the above diseases collect in the coast towns where there is a better chance of getting a living honestly or otherwise, (*b*) that the tribes further north are more virile than those on the coast.

323. Prisoners are weighed monthly and usually show an increase in weight; as a rule they are in better physical condition on discharge than when admitted.

324. The rations issued were good and sufficient. They can be increased or altered by the direction of prison medical officers. The diet scale is adhered to in all prisons with the exception of those situated in districts where the staple diet of the inhabitants is different. For instance, millet and guinea-corn to a great extent take the place of maize in the Northern Territories, while cassada and plantains are substituted in certain districts in Ashanti.

(*b*) Asylum.

Central Asylum, Accra.

Staff.

325. On 31st March, 1934 the staff of the Central Lunatic Asylum was as follows :—

(*a*) European—1 Alienist Officer ;

(*b*) African—1 Head Attendant, 1 Assistant, 1 Matron, 17 Male and 4 Female Mental Nurses, 1 Gatekeeper and a servant for the European inmate.

326. The provision for an increase in the staff of male nurses by three in the coming year will help towards more thorough supervision.

327. On 31st March, 1934 the total number of inmates was 382 composed of :—

Criminal male	58	Non-criminal male	258
Criminal female	1	Non-criminal female	65

an increase of seven over last year and twenty-seven over the previous year.

328. The table below shows admissions, deaths and discharges. Previous figures are also given for purposes of comparison.

TABLE XLIV.

	1930–31.	1931–32.	1932–33.	1933–34.
Remaining 1st April, ...	275	326	355	375
Admitted during the year	131	127	132	123
Discharged during the year	32	35	22	35
Escaped during the year	1	4	4	1
Deaths during the year	47	58	86	80
Remaining on 31st March	326	355	375	382

329. The high death-rate and low recovery rate are to be deplored. The cause is simple but the cure a matter of difficulty.

330. The accommodation is inadequate. A building designed to hold a maximum of 252 patients is at present accommodating 382.

331. For the proper treatment of victims of insanity, grading is necessary. To be compelled to associate convalescents and harmless cases with violent inmates is to erect a barrier against recovery. Apart from overcrowding in dormitories and cells the accomodation in the male infirmary is inadequate.

332. A sum has been voted and will be used during 1934 to provide additional accommodation. This is a step in the right direction ; but is not really facing the problem which will only be properly tackled by the erection of a properly designed mental hospital.

333. Viewing the steady increase year by year in the number of inmates the outlook cannot be said to be other than grave.

334. The diet given to the patients is excellent in quality and adequate in quantity. More and more the diet is supplemented by the produce of the Asylum farm—and the absence of deficiency disease is noteworthy.

F. McLAGAN,
Alienist Officer.

VIII.—METEOROLOGY.

TABLE XLV.

335. (*a*) METEOROLOGY—AVERAGE FIGURES FOR THE YEAR 1933-34.

	Temperature.					Rainfall.	Relative Humidity.	Wind.	
	Solar max.	Min. on grass.	Shade max.	Range.	Mean.	Inches (total.)	Degrees	Gen. dir.	Average force.
Accra	141.6	72.3	86.3	19.3	80.3	31.4	74.8	W	2.5
Kumasi	135.3	—	88.4	29.5	78.5	55.8	83.9	SW	0.9
Sekondi	143·9	72.6	89·8	22.7	81.2	49.3	74.7	SW	1.5
Tamale	149·7	66.8	93.0	30.6	81.5	45.9	65.8	SW	1.3
Takoradi	137.2	72.5	89.7	21.3	82.4	48.1	85.9	SSW	—

TABLE XLVI.

336. (*b*) METEOROLOGICAL OBSERVATIONS, LABORATORY GROUNDS, KAWLI BU, ACCRA, 9 A.M. READINGS, 1933-34.

	Rainfall in inches.	Highest maximum temperature recorded.	Lowest temperature recorded.	Daily average mean temperature.	Temperature of the dew point.	
					Highest.	Lowest.
April, 1933	3.52	89	75	83.4	78	71
May	2.74	87	74	81.5	78	71
June	6.17	86	74	79.6	76	72
July	2·35	83	73	75.8	75	72
August	0.93	82	72	77.1	74	71
September	0.42	83	73	74.8	73	70
October	4.83	85	73	75.6	75	68
November	1.09	86	74	80.5	76	70
December	1.78	86	70	79.8	76	63
January, 1934 ...	0.60	86	73	75.1	74	62
February	Nil	87	74	81.6	76	65
March	4.06	87	74	81.1	77	70

Total rainfall 28.5 inches.

IX.—SCIENTIFIC.

Annual Report of the Laboratory Service.

CONTENTS.

ANNUAL REPORT OF THE LABORATORY SERVICE.

I.—General Remarks.

337. This report covers the period 1st April, 1933 to 31st March, 1934 and refers to the work carried out in the Accra Laboratory only. Almost all the work of the laboratory during this period has been of a routine nature, consisting of the examination of material from the Gold Coast Hospital, Maternity Hospital, the Princess Marie Louise Hospital and Welfare Centre and from stations all over the Colony ; post-mortem examinations, both hospital and Coroners' cases ; bacteriological water analysis and section work.

II.—REPORT ON ROUTINE WORK.

338. (*a*) *Yaws and Syphilis.*—Two thousand, seven hundred and sixty-four Wassermann tests were carried out. 43 per cent were positive. These results correspond closely with those of the last few years.

339. (*b*) *Infections due to organisms of the Salmonella group.*—The following table shows the number of infections in this group, based on cultivation, agglutination, and post-mortem findings.

TABLE XLVII.

	Culture.			*Agglutination.*		
	Blood	*Faeces.*	*Urine.*		*P.M.*	*Total.*
S. typhi	14	3	1	43	1	62
S. paratyphi A	1	—	—	3	—	4
S. paratyphi B	1	—	—	1	—	2
S. paratyphi C	—	—	—	—	3	3
S. dublin	2	—	—	—	—	2
S. reading	—	1	—	—	—	1

This gives a total of 74 cases.

340. *S. paratyphi C.*—The three cases were all seen on the post-mortem table, and the true nature of the infection remained doubtful until the cultures were examined. The post-mortem findings in the three cases were very different, and it is worth recording them in some detail.

341. The first case was a male African infant 8 months old. There was patchy consolidation at the bases of both lungs. The meninges were œdematous and the cerebro-spinal fluid obtained by a lumbar puncture was turbid and greenish yellow in colour. The turbidity was due to organisms, the cell count being normal. S.paratyphi C was isolated in pure culture from the fluid.

342. The second case was an African child aged $1\frac{1}{2}$ years, she was admitted to the Princess Marie Louise Hospital with diarrhœa and severe toxæmia and died soon after. There were about 20 c.c.s. of pus lying free in the abdominal cavity. The intestines contained a green mucoid stool, there was no swelling of Peyer's patches, no ulceration, and no perforation ; the mesenteric glands were not enlarged. The liver was normal in size and of dark grey colour. The spleen was enlarged and congested. The kidneys were pale and slightly enlarged, section showed a pale cortex and dark coloured pyramids, the capsule stripped easily. S.paratyphi C was isolated from the heart's blood, spleen and abdominal pus but not from the gut.

343. The third case was a male aged 30 years. The liver was enlarged to twice its normal size. The left lobe was occupied by a large abscess, about the size of an orange, which had ruptured into the abdominal cavity. Section revealed another large abscess in the right lobe. The walls of the abscess cavities were very ragged and the pus was thick and mucoid. The mucosa of the large and small bowel was slightly inflamed, but no ulceration was seen. S.paratyphi C was isolated from the heart's blood, gall-bladder, spleen and liver pus.

344. *S.dublin*—The isolation of the " Dublin " type from two cases of continued fever, one European, the other an African, is of special interest. This type has been isolated from cases of calf dysentery in Europe, and some authorities suggest that it is of bovine habitat and that cow's milk is the vehicle of human infection. The " Dublin " type appears to have a tendency to produce a continued

fever in man rather than an acute gastro-enteritis and several workers, namely Professors Biggar, Smith and Scott (*J. Hygiene,* 1930, XXX, 32), Gregg and Hayes (*J.R.A.M.C.,* 1921, XXXVII, 64), have reported cases of this kind The organism was isolated from the blood in the European case, and from the blood and pus from a large liver abscess in the African case which was fatal.

345. The " Dublin " type is closely related antigenically to S.enteritidis (Gartner), and in view of this fact, the strains were sent to the Lister Institute for identification, for which we are indebted to Dr. St. John-Brooks, the Curator of the National Collection of Type Cultures.

346. *S. reading.*—The " Reading " type was isolated from a European who had a short but severe attack of what looked like bacillary dysentery. Culture of the fæces yielded a pure growth of an organism of the salmonella group which was identified as S. reading. About three years previously the patient had an attack similar to the one described above and an organism of the salmonella group, which was not identified, was isolated from the fæces.

347. *The interpretation of the agglutination tests.*—The number of agglutination tests carried out for this group during the year was 230. One hundred and fifty-three were completely negative. Fifty-seven showed the presence of " H " agglutinins to S.typhi to a titre of 1 :50 or over. Of these 57 sera, 14 also showed the presence of agglutinins for S.paratyphi A and B. Twelve of these were Europeans and inoculated persons, and in the absence of a second or third test, were disregarded. The remaining two sera, showing agglutinins to S.typhi and S.paratyphi A and B, were from Africans and one of them had had 1/3 c.c. T.A.B. vaccine intra-venously as protein shock treatment for inguinal bubo about two years previously. This treatment for bubo, etc., is now being used more widely and in the future may lead to some difficulty in the interpretation of the agglutination test especially as in many cases the serum is only sent once to the laboratory.

348. In Africans a diagnosis of typhoid fever by agglutination has been made, with due regard to the stage of the disease at which the serum was taken and to the known distribution of agglutinins among the normal population, if " H " agglutinins to S. typhi alone were present to a titre of 1 :50 or more ; but the interpretation of results would be very much simplified if medical officers would realise the importance of sending more than one sample of serum at appropriate intervals.

349. The use of an " O " suspension of S.typhi did not aid much in the diagnosis by agglutination, " O " agglutinins being only demonstrated in those cases in which the " H " agglutinin titre, of itself, was diagnostic.

TABLE XLVIII.

350. (*c*) *Dysentery.*—No. of stools examined.	E.histolytica.	Balantidium coli.	Lamblia intestinalis.
Protozoal 3,894	55	8	20

351. *Bacillary.*—Bact. flexneri was isolated twenty-four times from a total of 304 fæces cultured. Schmitz's bacillus was isolated four times and Sonne's bacillus twice.

352. (*d*) *Blood Cultures.*—The table shows the results of blood culture for the last three years. The cultures have been made in 6 oz. capacity " medical flat " bottles with screw cap and rubber washer, covered with a Viskap, as described by McCarthy in the *Lancet,* Vol. I, p. 583, 1931 ; these bottles, ready for the introduction of blood, can be sent to outstations when required ; the risk of contamination is nil and the bottles have been sent safely to the laboratory from stations about 200 miles distant.

TABLE XLIX.

Organism isolated.	1931–32.	1932–33.	1933–34.
S. typhi	1	6	14
S. paratyphi A	—	3	1
S. paratyphi B	—	—	1
S. paratyphi C	—	1	—
S. dublin	—	—	2
Ps. pyocyanea	—	—	4
Pneumococcus	—	—	2
Haemolytic streptococcus	4	1	4
Strep. viridans	—	—	2
Staph. aureus	—	—	4
Bact. coli	1	6	5
Cl. welchii	—	—	1
Cl. septique	—	—	1
Anaerobic streptococcus	—	1	—
Total positive	6	18	41
Negative	41	80	105
Total blood cultures	47	98	146

353. (*e*) *Diphtheria.*—There were four cases of diphtheria seen during the year; one case was a European. Two of the African cases were fatal and one of these was of the fulminating hæmorrhagic type. The strains isolated from these cases have not yet been classified into gravis, mitis or intermediate types, but it is hoped that this will be done during the year. The strain isolated from the haemorrhagic case fermented starch and glycogen, so it is probably either the gravis or intermediate type. As far as is known none of the contacts developed the disease.

354. (*f*) *Hsitological Examinations.*—Material from 302 cases was sectioned; this included 29 malignant tumours (9 sarcomata and 20 carcinomata).

355. A case of Von Recklinghausen's disease (multiple neuro-fibromatosis) which came to the post-mortem table, was remarkable on account of the number and extent of the visceral lesions and the slight skin involvement. The spleen, small intestine, pancreas and mesenteric glands were extensively involved. As the nature of the case was very obscure, material was sent to Colonel Harvey, Royal College of Physicians' Laboratory, Edinburgh, and we are much indebted to him for the trouble and interest which he took in the case.

356. (*g*) *Zoological.*—Mr. Woodward has continued his studies on reptiles throughout the year.

TABLE L.

STATISTICAL RETURNS OF ROUTINE EXAMINATIONS INCLUDING REPEAT TESTS.

Examinations of Blood.

	Total
(*a*) for parasites—	5,384
(1) Malaria parasites	1,380
(2) Trypanosomes	10
(3) Microfilariae	64
(*b*) differential and complete counts	354
(*c*) agglutinations	246
(*d*) blood cultures	159
(*e*) Wassermann tests	2,764
(*f*) chemical examinations—total	172
(1) urea	61
(2) dextrose	99
(3) alkali reserve	3
(4) Van den Bergh	9
(*g*) blood grouping	8

Examinations of faeces—total	4,198
(*a*) general examinations	3,894
(*b*) bacteriological examinations	304
Examinations of Urine—total	2,166
(*a*) General	1,892
(*b*) bilharzial infections	120
(*c*) bacteriological	154
Examinations of sputa	830
Miscellaneous including pus.	371
Cerebro-spinal fluids	45
Post-mortem examinations	128
Bacteriological examinations of drinking waters	251
Animal inoculations	65
Rat examinations	1,819

TABLE LI.

POST-MORTEM EXAMINATIONS.

I.—*Infectious and Parasitic Diseases.*	
Typhoid	1
Paratyphoid	3
Diphtheria	1
Influenzal meningitis	4
Dysentery	2
Pulmonary tuberculosis	4
Tuberculosis meningitis	1
Tuberculosis (generalised)	2
Septicaemia	8
Malaria	3
II.—*Cancer and other Tumours.*	
Carcinoma of pancreas	1
Sarcoma of kidney	1
Von Recklinghausens disease	1
II.—*Rheumatism, Diseases of Nutrition and of endocrine and other general Disease.*	
Avitaminosis (Pellagra)	2
Toxaemia	2
IV.—*Diseases of the Blood and Blood forming Organs.*	
Lymphatic leukaemia	1
VI.—*Diseases of Nervous System and Sense Organs.*	
Encephalitis	1
Meningitis	2
VII.—*Diseases of the Circulatory System.*	
Pericarditis	1
Endocarditis	1
Myocardial degeneration	4
Aneurysm of aorta	1
Gangrene of leg	1
Aortitis	2
VIII.—*Diseases of the Respiratory System.*	
Broncho-pneumonia	8
Lobar-pneumonia	11
Lung abscess	1
IX.—*Diseases of Digestive System.*	
Oesophageal obstruction by Kola Bean	1
Enteritis (acute)	1
Intestinal obstruction	1
Cirrhosis of liver	1
Liver abscess	2
Peritonitis	6

X.—*Non-Veneral Disease of the Genito-urinary System and Annexa.*

Nephritis (acute)	2
Nephritis (chronic)	5

XI.—*Disease of Pregnancy, Child birth and the Peurperal State.*

Postpartum shock	1
Puerperal septicaemia	2
Eclampsia	2
Toxaemia of pregnancy	1

XV.—*Diseases of early Infancy.*

Icterus neonatorum	1
Stillborn	8

XVII.—*Diseases from Violence.*

Hanging (suicidal)	2
Gunshot	1
Injuries general	10
Fractured skull	3
Drowning	3

XVIII.—*Ill-defined Diseases.*

Malnutrition	3
Unknown	2
	128

TABLE LII.

BACTERIOLOGICAL EXAMINATIONS OF WATER SUPPLIES.

Source.	*Negative.*	*B. coli present; specimens enumerated according to smallest volume (c.c.s) in which B. coli found.* 100	10	1	0.1 *c.c.*	*Totals.*
Storage reservoir No. 1 ...	6	1	3	—	—	10
,, ,, No. 2 ...	8	3	3	—	—	14
Final Filter No. 1	13	1	—	—	—	14
,, ,, No. 2	12	1	—	—	—	13
,, ,, No. 3	14	—	—	—	—	14
,, ,, No. 4	13	—	—	—	—	13
,, ,, No. 5	13	1	—	—	—	14
,, ,, No. 6	12	—	—	—	—	12
Laboratory Tap...	53	—	—	—	—	53
Other Taps, Accra	—	2	1	—	—	3
Tarkwa Water Supply	5	—	3	—	—	8
Cape Coast Water Supply ...	2	—	—	—	—	2
Nsuta Water Supply	4	—	—	—	—	4
Konongo Water Supply ...	2	1	—	—	—	3
Bogosu Water Supply	—	—	2	—	—	2
Winnebá Water Supply ...	4	—	—	—	—	4
Kumasi Water Supply	3	—	—	4	—	4
Tarkwa Bathing Pool	—	—	—	4	—	4
Accra Soda Waters	32	9	15	—	2	58
Kumasi Soda Waters	2	—	—	—	—	2
Totals	198	19	27	4	3	251

G. ROBINSON,
Senior Pathologist.

CHEMICAL LABORATORY, ACCRA, 1933-34.

357. The total number of samples dealt with was 1,726. This is a decrease of 133, as compared with the previous year but is the second largest total in the history of the Laboratory.

This total was made up as follows :—

TABLE LIII.

(*a*) *Coroners and Medical Officers.*			
Viscera	34		
Medicines, etc.	18		
			52
(*b*) *Customs.*			
Brandy	11		
Geneva	8		
Gin	8		
Liqueur	3		
Rum	11		
Whisky	16		
Beer and stout	54		
Port	11		
Sherry	15		
Tonic and medicated wine	57		
Vermouth	49		
Wine (other kinds)	309		
Medicine (patent and other)	122		
Methylated spirit	24		
Milk	66		
Paint, varnish, etc.	23		
Perfumery	112		
Miscellaneous	200		
			1,099
(*c*) *Medical and Health Services.*			
Drinking water	27		
Miscellaneous	27		
			54
(*d*) *Police.*			
Illicit spirits	484		
Native medicines	15		
Miscellaneous	11		
			51
(*e*) *Other Departments.*			
Miscellaneous	11		
			11
Total			1,726

358. It will be seen that the reduction in numbers is virtually entirely due to a falling-off in the number of samples submitted by the Customs Department.

359. Samples of illicit spirit increased in number by 25 per cent over the previous year.

360. Poison cases of interest included :—

(*a*) A case of lysol poisoning in which the medical evidence indicated that the actual cause of death was drowning.

(*b*) Three arrow-heads, extracted from cadavers, which gave evidence of the presence of strophanthus (one of the best known arrow-poisons) ; but the chemical and physiological reactions were not considered to be sufficiently definite to amount to legal proof.

(*c*) A non-fatal case of Veronal poisoning appears to be of interest by reason of a fairly definite medical history. One hundred and twenty grains were believed to have been taken about twelve hours before treatment. Stomach-washings removed at that time (there was a history of one attack of vomiting previously) yielded no Veronal or no more than the faintest traces. Urine (about two ounces) obtained three and a half hours later yielded approximately one grain of Veronal.

361. Miscellaneous work included samples of locally-made gunpowder and of the separate ingredients for its manufacture; " Totaquina " for the estimation of the various cinchona alkaloids contained in it; and several samples of water under experimental treatment with alum for purification purposes.

362. Mr. F. R. Johnson, M.SC. (London), F.I.C., was appointed Analytical Chemist in place of Mr. R. Simmons, F.I.C. (retired on pension), on 10th January, and assumed duty on 24th January, 1934.

R. W. CLARKE,
Analytical Chemist.

RETURN A.

Medical, Health and Laboratory Service Staff on the 1st April, 1933.

	Authorised establishment.	Provision in estimates.	Vacancy.
Director of Medical and Sanitary Service	1	1	—
Deputy Director of Medical Service	1	1	—
Deputy Director of Health Service	1	1	—
Deputy Director of Laboratory Service	—	—	—
Assistant Director of Medical Service	2	1	—
Assistant Director of Health Service	—	—	—
Specialists (one surgical and one medical)	2	2	—
Senior Health Officers	2	2	—
Senior Medical Officers	6	6	—
Senior Pathologist	1	1	—
Pathologists	2	2	—
Medical Officers	35	35	—
Medical Officers of Health	8	8	—
Alienist Officer	1	1	—
Woman Medical Officer	1	1	—
Women Medical Officers (Welfare Centres)	4	4	—
African Medical Officers	4	4	—
Radiographer	1	1	—
Assistant Radiographer	1	1	—
Dental Surgeon	1	1	—
African Government Dentist	1	—	—
Analytical Chemist	2	2	—
Dispensers' Instructor	1	1	—
Medical Storekeeper	1	1	—
Secretary, Gold Coast Hospital	1	1	—
Chief Sanitary Superintendent	1	1	—
Sanitary Superintendents	19	19	—
Laboratory Assistants	2	2	—
European Nursing Staff.			
Matron	1	1	—
Senior Nursing Sisters	3	3	—
Nursing Sisters	27	27	—
Members of the Subordinate Staff.			
Medical Branch.			
Chief Dispensers	2	2	—
First Division Dispensers	6	6	—
Second Division Dispensers and Dispensers-in-Training	63	63	—
Laboratory Attendants	2	2	—
Chief Nurses	3	—	—
First Division Nurses	6	6	—
Second Division Nurses and Nurses-in-Training	200	200	—
Midwives-in-Training	6	6	—
Chief Clerk	1	1	—
First Division Clerks	2	2	—
Second Division Clerks	22	22	—
Lodge-Keepers	2	2	—
Telephone Operators	4	4	—
Lunatic Asylum.			
Head Attendant	1	1	—
Assistant Attendant	1	1	—
Mental Nurses	21	21	—
Matron	1	1	—
Gatekeeper	1	1	—
Health Branch.			
Office Assistant and Accountant	1	1	—
First Division Clerk	1	1	—
Second Division Clerks	18	18	—
Sanitary Inspector and Training Officer	1	1	—
Senior Division Sanitary Inspectors	5	5	—
Second Division Sanitary Inspectors and Sanitary Inspectors-in-Training	87	87	—
Storekeepers	2	2	—
Disinfector Mechanic	1	1	—
Vaccinators	12	12	—
Senior Village Overseer	1	1	—
Village Overseers	18	18	—
Assistant Disinfector Mechanics	4	4	—
Nurse-Midwives	9	9	—
Second Division Dispensers and Dispensers-in-Training	4	4	—
Second Division Nurses and Nurses-in-Training	13	13	—
Health Visitors	4	4	—
Engineering Fitter	1	1	—
Market Clerks	2	2	—

RETURN A—(*contd.*)

	Authorised establishment.	Provision in estimates	Vacancy
Contagious Diseases Hospital.			
Caretaker	1	1	—
Attendants	3	3	—
Medical Research Institute.			
Laboratory Attendants	9	9	—
Second Division Clerks	1	1	—

RETURN B.

(C) FINANCE.

Estimated Expenditure for the year 1933–34.

(*a*) Personal Emoluments.

Medical.

	£	s.	d.
Administrative Officers	4,300	0	0
Specialists	2,700	0	0
Senior Medical Officers	6,900	0	0
Medical Officers (European and African)	34,113	0	0
Dental Surgeon	960	0	0
European Nursing Staff	13,713	0	0
African Nursing Staff and Dispensers	30,091	0	0
Clerical Staff	3,899	0	0
Various items, allowances, etc.	13,117	0	0
Estimated Total Personal Emoluments	109,793	0	0
Actual Total Personal Emlouments	104,689	17	2

Health.

Administrative Officers	1,400	0	0
Senior Health Officers and Medical Officers of Health	9,793	0	0
Sanitary Superintendents	9,400	0	0
African Sanitary Inspectors	14,426	0	0
Various items, allowances, etc.	15,561	0	0
Estimated Total Personal Emoluments	50,580	0	0
Actual Total Personal Emoluments	48,690	0	4

Laboratory Service.

European Staff	4,745	0	0
African Staff	1,119	0	0
Estimated Total Personal Emoluments	5,864	0	0
Actual Total Personal Emoluments	5,531	3	6

(*b*) Other Charges.

Medical.

	£	s.	d.
Passages, transport, etc.	11,860	0	0
Hospital equipment, drugs, medical appliances, surgical instruments, etc.	14,750	0	0
Diets, medical comforts	8,950	0	0
Other items	14,606	0	0
Estimated Total	50,166	0	0
Actual Expenditure	50,509	3	11

RETURN B.

OTHER CHARGES—*continued.*

Health.

Passages, transport, etc.	6,024	0	0
General Health Votes	34,926	0	0
Scavengers and labourers	30,000	0	0
Estimated Total	70,950	0	0
Actual Expenditure	67,793	10	8

Laboratory Service.

Passages, transport, etc.	600	0	0
General Research Votes	561	0	0
Estimated Total	1,161	0	0
Actual Expenditure	909	7	11

Estimated Total Expenditure, Medical Department (all branches) -	288,514	0	0
Actual Total Expenditure, Medical Department (all branches)	278,123	3	6

Revenue earned by Medical Branch :—

(*a*) Hospital fees	9,532	19	6
(*b*) Sale of drugs in private practice	432	19	11
(*c*) Re-imbursement by Railway Department and Takoradi Harbour	2,100	0	0
Total	12,065	19	5

Revenue earned by Health Branch :—

(*a*) Fines for sanitary offences	5,050	2	3
(*b*) Market and slaughter-house fees	7,574	6	4
(*c*) Poundage fees	198	5	0
(*d*) Births, deaths, and burials	647	17	0
(*e*) Re-imbursement by Railway Department and Takoradi Harbour	2,968	0	0
(*f*) Conservancy fees	3,170	5	11
(*g*) Fees collected at Welfare Centres	2,643	14	9
Total	22,252	11	3

RETURN C.

Population.

	Census.	Census 1931.			Mid-year 1933.
		Males.	Females.	Persons.	
A.—*Resident Africans.*					
1. Colony	1,171,913	806,466	764,828	1,571,294	1,661,155
2. Ashanti	406,193	298,341	279,737	578,078	616,752
3. Northern Territories ...	530,355	360,260	357,015	717,275	759,332
4. Togoland under Birtish Mandate	187,939	150,464	143,207	293,671	317,461
Total	2,296,400	1,615,531	1,544,787	3,160,318	3,354,700
B.—*Resident Non-Africans.*					
1. Colony	1,530	1,839	465	2,304	2,304
2. Ashanti	447	491	133	624	624
3. Northern Territories ...	36	89	18	107	107
4. Togoland under British Mandate	20	33	10	43	43
Total	2,033	2,452	626	3,078	3,078
C.—*Maritime.*					
1. Africans	1,157	68	—	68	68
2. Non-Africans	371	104	—	104	104
Total	1,528	172	—	172	172
D.—*The Gold Coast and its Dependencies.*					
1. Africans :					
(*a*) Resident	2,108,461	1,465,067	1,401,580	2,866,647	3,037,239
(*b*) Maritime	1,157	68	—	68	68
Total	2,109,618	1,465,135	1,401,580	2,866,715	3,037,307
2. Non-Africans :					
(*a*) Resident	2,013	2,419	616	3,035	3,035
(*b*) Maritime	371	104	—	104	104
Total	2,384	2,523	616	3,139	3,139
E.—*Togoland under British Mandate.*					
1. Africans	187,939	150,464	143,207	293,671	317,461
2. Non-Africans	20	33	10	43	43
Grand Total ...	2,299,961	1,618,155	1,545,413	3,163,568	3,357,950

Return D.

Return of diseases and deaths (In-patients) and diseases (Out-patients) for the year 1933-34.

RETURN D.

Return of Diseases and Deaths (In-Patients) and Diseases (Out-Patients) for the Year 1933–34.

Medical and Health Branches.

Diseases.	In-Patients.				Out-Patients.	
	Remaining in hospital on 31st March, 1933.	Yearly Total.		Total cases treated.	Remaining in hospital on 31st March, 1934.	Male.	Female.
		Admissions.	Deaths.				
I.—*Epidemic, endemic, and infectious diseases.*							
1. Enteric group—							
(*a*) Typhoid fever ...	1	60	8	61	3	25	12
(*b*) Paratyphoid A. ...	—	10	—	10	—	—	—
(*c*) Paratyphoid B. ...	—	3	—	3	1	—	—
(*d*) Type not defined	—	6	2	6	—	9	3
2. Typhus	—	—	—	—	—	—	—
3. Relapsing fever ...	—	23	2	23	—	23	1
4. Undulant fever	—	—	—	—	—	—	—
5. Malaria—							
(*a*) Tertian	7	214	2	221	2	323	51
(*b*) Quartan	—	10	—	10	—	17	17
(*c*) Aestivo-autumnal	24	2,119	20	2,143	17	6,029	3,188
(*d*) Cachexia	—	11	1	11	3	85	61
(*e*) Blackwater ...	1	11	5	12	—	4	2
(*f*) Unclassified ...	14	372	26	386	6	6,894	6,130
6. Small-pox	—	—	—	—	—	1	—
7. Measles	—	11	—	11	3	179	134
8. Scarlet fever	—	—	—	—	—	1	2
9. Whooping cough ...	—	12	2	12	—	477	500
10. Diphtheria	—	7	2	7	—	3	3
11. Influenza	—	114	2	114	—	235	143
12. Miliary fever	—	—	—	—	—	—	1
13. Mumps	—	40	—	40	5	99	35
14. Cholera	—	—	—	—	—	—	—
15. Epidemic diarrhoea ...	—	32	7	32	—	27	30
16. Dysentery—							
(*a*) Amœbic	10	236	15	246	4	303	156
(*b*) Bacillary	—	63	11	63	3	74	44
(*c*) Undefined or due to other causes ...	2	85	12	87	—	291	171
17. Plague—							
(*a*) Bubonic	—	—	—	—	—	—	—
(*b*) Pneumonic ...	—	—	—	—	—	—	—
(*c*) Septicæmic ...	—	—	—	—	—	—	—
(*d*) Undefined ...	—	—	—	—	—	—	—
18. Yellow fever	—	1	—	1	—	2	1
19. Spirochætosis icterohæmorrhagica .	—	—	—	—	—	—	—
20. Leprosy	78	54	9	132	91	426	255
21. Erysipelas	—	9	1	9	—	11	2
22. Acute poliomyelitis ...	2	3	1	5	1	23	9
23. Encephalitis lethargica	—	4	2	4	—	4	1
24. Epidemic cerebro-spinal fever	—	2	1	2	—	—	—
25. Other epidemic diseases—							
(*a*) Rubeola (German measles) ...	—	—	—	—	—	13	7
(*b*) Varicella (chicken-pox)	24	347	—	371	22	189	37
(*c*) Kala-azar ...	—	—	—	—	—	—	—
(*d*) Phlebotomus fever	—	—	—	—	—	—	—
(*e*) Dengue	—	3	—	3	—	7	1
(*f*) Epidemic dropsy	—	—	—	—	—	—	—
(*g*) Yaws	20	253	18	273	22	32,190	27,931
(*h*) Trypanosomiasis	58	683	81	741	47	372	73
26. Glanders	—	—	—	—	—	—	—
27. Anthrax	—	—	—	—	—	—	1
28. Rabies	—	—	—	—	—	—	—
29. Tetanus	1	40	18	41	—	28	17
30. Mycosis	1	2	—	3	—	34	15
31. Tuberculosis, pulmonary and laryngeal ...	19	340	165	359	32	484	163
32. Tuberculosis of the meninges or central nervous system ...	—	3	2	3	—	1	—

RETURN D—*continued.*

Return of Diseases and Deaths (In-Patients) and Diseases (Out-Patients) for the Year 1933–34.

Diseases.	In-Patients.				Out-Patients	
	Remaining in hospital on 31st March, 1933.	Yearly Total. Admissions.	Yearly Total. Deaths.	Total cases treated.	Remaining in hospital on 31st March, 1934.	Male.	Female.
I.—*Epidemic, endemic and infectious diseases (contd.)*							
33. Tuberculosis of the intestines or peritoneum ...	—	18	6	18	1	8	3
34. Tuberculosis of the vertebral column ...	7	18	6	25	4	27	6
35. Tuberculosis of bones and joints	5	15	—	20	4	14	7
36. Tuberculosis of other organs—							
(*a*) skin or subcutaneous tissue (lupus) ...	—	—	—	—	—	—	—
(*b*) Bones	—	—	—	—	—	2	—
(*c*) Lymphatic system	—	22	1	22	5	13	7
(*d*) Genito-urinary ...	—	2	—	2	—	—	—
(*e*) Other organs ...	1	1	—	2	—	5	—
37. Tuberculosis disseminated—							
(*a*) Acute	—	2	2	2	—	—	—
(*b*) Chronic	—	—	—	—	—	—	—
38. Syphilis—							
(*a*) Primary	—	11	—	11	1	85	12
(*b*) Secondary... ...	—	34	—	34	1	78	38
(*c*) Tertiary	2	48	9	50	1	100	75
(*d*) Hereditary ...	2	11	2	13	1	28	20
(*e*) Period not indicated	2	32	3	34	5	51	17
39. Soft chancre	7	60	—	67	5	232	9
40. A.—Gonorrhoea and its complications ...	14	299	4	313	13	2,536	374
B.—Gonorrhoeal ophthalmia	1	50	—	51	2	86	45
C.—Gonorrhoeal arthritis	8	42	1	50	3	333	58
D.—Granuloma venereum	—	21	—	21	1	11	2
41. Septicæmia	—	29	25	29	—	13	9
42. Other infectious diseases	—	1	—	1	1	17	8
II.—*General diseases not mentioned above.*							
43. Cancer or other malignant tumours of the buccal cavity ...	—	7	3	7	—	2	—
44. Cancer or other malignant tumours of the stomach or liver ...	—	7	5	7	1	5	2
45. Cancer or other malignant tumours of the peritoneum, intestines, rectum	—	7	5	7	—	3	1
46. Cancer or other malignant tumours of the female genital organs	—	6	3	6	—	—	22
47. Cancer or other malignant tumours of the breast	—	3	—	3	—	—	4
48. Cancer or other malignant tumours of the skin	—	8	1	8	1	14	10
49. Cancer or other malignant tumours of organs not specified	4	20	6	24	1	21	8
50. Tumours non-malignant	1	87	1	88	3	234	129
51. Acute rheumatism ...	—	3	—	3	1	3	2
52. Chronic rheumatism ...	5	128	—	133	4	4,067	1,984
53. Scurvy (including Barlow's disease) ...	—	1	—	1	—	5	7
54. Pellagra	—	—	—	—	—	—	—
55. A.—Beri-beri	3	6	—	9	—	11	—

RETURN D—*continued.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1933–34.

DISEASES.	IN-PATIENTS.				OUT-PATIENTS.	
	Remaining in hospital on 31st March, 1933.	Yearly Total.		Total cases treated.	Remaining in hospital on 31st March, 1934.	Male.	Female.
		Admissions.	Deaths.				
II.—*General diseases not mentioned above. (contd.)*							
B.—Avitaminosis ...	—	15	6	15	—	15	16
56. Rickets	—	—	—	—	—	5	5
57. Diabetes (not including insipidus)	—	12	1	12	—	18	10
58. Anæmia—							
(*a*) Pernicious... ...	—	1	—	1	—	1	—
(*b*) Other anæmias and chlorosis	2	91	9	93	3	203	184
59. Diseases of the pituitary body	—	—	—	—	—	—	—
60. Diseases of the thyroid gland—							
(*a*) Exophthalmic goitre	—	3	1	3	—	4	8
(*b*) Other diseases of the thyroid gland, myxœdema ...	—	7	1	7	—	8	17
61. Diseases of the parathyroid glands ...	—	1	—	1	—	1	—
62. Diseases of the thymus	—	—	—	—	—	—	—
63. Diseases of the suprarenal glands	—	—	—	—	—	—	—
64. Disease of the spleen ...	1	9	1	10	—	87	56
65. Leukæmia—							
(*a*) Leukæmia ...	—	3	—	3	—	2	2
(*b*) Hodgkin's disease	—	3	—	3	—	5	—
66. Alcoholism	—	6	1	6	—	9	1
67. Chronic poisoning by mineral substances (lead, mercury, etc.) ...	1	10	1	11	—	1	—
68. Chronic poisoning by organic substances (morphia, cocaine, etc.)	—	—	—	—	—	1	—
69. Other general diseases—							
(*a*) Auto-intoxication	—	1	—	1	—	12	11
(*b*) Purpura hæmorrhagica	—	—	—	—	—	1	—
(*c*) Hæmophilia ...	—	1	—	1	—	1	1
(*d*) Diabetes insipidus	—	5	—	5	—	3	—
III.—*Affections of the nervous system and organs of the senses.*							
70. Encephalitis (not including encephalitis lethargica)	—	2	—	2	—	6	1
71. Meningitis (not including tuberculous meningitis or cerebrospinal meningitis)	1	25	18	26	—	19	11
72. Locomotor ataxia ...	1	5	1	6	—	1	2
73. Other affections of the spinal cord	—	7	—	7	2	19	2
74. Apoplexy—							
(*a*) Hæmorrhage ...	1	43	29	44	1	6	2
(*b*) Embolism ...	—	2	—	2	—	1	—
(*c*) Thrombosis ...	—	7	1	7	3	7	2
75. Paralysis—							
(*a*) Hemiplegia ...	8	46	5	54	3	94	21
(*b*) Other paralyses ...	8	35	3	43	4	76	26
76. General paralysis of the insane	1	2	1	3	—	—	—
77. Other forms of mental alienation	347	146	3	493	353	75	16
78. Epilepsy	16	22	4	38	18	62	31

RETURN D—*continued.*

Return of Diseases and Deaths (In-Patients) and Diseases (Out-Patients) for the Year 1933–34.

Diseases.	In-Patients.				Out-Patients.	
	Remaining in hospital on 31st March, 1933.	Yearly Total. Admissions.	Yearly Total. Deaths.	Total cases treated.	Remaining in hospital on 31st March, 1934.	Male.	Female.
III.—*Affections of the nervous system and organs of the senses. (contd.).*							
79. Eclampsia, convulsions (non-puerperal) 5 years or over	—	11	3	11	—	3	3
80. Infantile convulsions ...	—	15	6	15	—	43	28
81. Chorea	—	—	—	—	—	—	—
82. A.—Hysteria	—	15	1	15	—	7	14
B.—Neuritis	1	22	—	23	1	220	60
C.—Neurasthenia ...	3	25	2	28	1	79	37
83. Cerebral softening ...	—	7	2	7	—	4	—
84. Other affections of the nervous system, such as paralysis agitans ...	—	25	—	25	2	76	32
85. Affections of the organs of vision—							
(*a*) Diseases of the eye	3	73	1	76	1	483	255
(*b*) Conjunctivitis ...	16	243	—	259	13	3,153	2,551
(*c*) Trachoma ...	—	13	—	13	—	69	128
(*d*) Tumours of the eye	—	2	—	2	1	28	8
(*e*) Other affections of the eye	7	134	—	141	7	617	292
86. Affections of the ear or mastoid sinus ...	3	91	3	94	3	1,748	906
IV.—*Affections of the circulatory system.*							
87. Pericarditis	—	10	5	10	—	5	2
88. Acute endocarditis or myocarditis	—	11	3	11	1	12	3
89. Angina pectoris ...	—	3	1	3	—	7	3
90. Other diseases of the heart—	1	11	3	12	—	9	7
A.—Valvular— ...	3	11	4	14	2	21	16
(*a*) Mitral	1	37	8	38	3	69	32
(*b*) Aortic	—	17	3	17	—	19	7
(*c*) Tricuspid	—	—	—	—	—	—	—
(*d*) Pulmonary ...	—	1	1	1	—	1	—
B.—Myocarditis ...	1	65	31	66	2	102	54
91. Diseases of the arteries—							
(*a*) Aneurism	—	9	2	9	1	15	4
(*b*) Arterio-sclerosis ...	—	8	—	8	—	33	2
(*c*) Other diseases ...	—	—	—	—	—	24	18
92. Embolism or thrombosis non-cerebral	—	3	2	3	—	1	1
93. Diseases of the veins—	—	—	—	—	—	10	4
(*a*) Hæmorrhoids ...	6	53	—	59	5	249	60
(*b*) Varicose veins ...	1	3	—	4	—	26	2
(*c*) Phlebitis	—	3	—	3	—	6	2
94. Diseases of the lymphatic system—							
(*a*) Lymphangitis ...	1	13	—	14	1	54	20
(*b*) Lymphadenitis, bubo (non-specific)	7	181	1	188	7	522	118
95. Hæmorrhage of undetermined cause ...	—	13	1	13	—	15	5
96. Other affections of the circulatory system ...	—	7	—	7	—	23	8
V.—*Affections of the respiratory system.*							
97. Diseases of the nasal passages—							
(*a*) Adenoids	—	20	—	20	1	49	17
(*b*) Polypus	—	1	—	1	—	7	10
(*c*) Rhinitis	1	7	—	8	—	148	59

RETURN D—*continued.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1933–34.

DISEASES.	IN-PATIENTS.				OUT-PATIENTS.	
	Remaining in hospital on 31st March, 1933.	Yearly Total.		Total cases treated.	Remaining in hospital on 31st March, 1934.	Male.	Female.
		Admissions.	Deaths.				
V.—Affections of the respiratory system. (contd.)							
97. Diseases of the nasal passages—*contd.*							
(*d*) Coryza	—	57	—	57	1	1,329	534
(*e*) Ill-defined ...	—	4	—	4	—	59	103
98. Affections of the larynx—	—	—	—	—	—	—	2
Laryngitis ...	—	14	—	14	1	210	82
99. Bronchitis—							
(*a*) Acute	10	214	6	224	4	4,105	2,831
(*b*) Chronic	1	117	8	118	6	3,013	1,627
100. Broncho-pneumonia ...	3	166	42	169	3	243	127
101. Pneumonia—							
(*a*) Lobar	17	312	108	329	16	226	80
(*b*) Unclassified ...	—	84	23	84	3	99	79
102. Pleurisy, empyema ...	5	120	11	125	4	253	58
103. Congestion of the lungs	1	8	—	9	2	25	4
104. Gangrene of the lungs ...	—	—	—	—	—	—	—
105. Asthma	1	51	6	52	2	161	70
106. Pulmonary emphysema	—	2	1	2	—	8	—
107. Other affections of the lungs—	—	8	1	8	—	9	4
Pulmonary spirochætosis	—	—	—	—	—	—	—
VI.—*Diseases of the digestive system.*							
108. A.—Diseases of teeth or gums—	1	13	—	14	—	849	405
Caries, pyorrhœa, etc.	4	56	4	60	1	1,299	789
B.—Other affections of the mouth	—	2	—	2	—	117	66
(*a*) Stomatitis ...	1	60	5	61	2	563	396
(*b*) Glossitis, etc. ...	—	12	—	12	—	362	349
109. Affections of the pharynx or tonsils	—	2	—	2	—	—	—
(*a*) Tonsillitis ...	3	88	2	91	—	329	203
(*b*) Pharynigitis ...	1	30	1	31	—	354	162
110. Affections of the œsophagus	—	4	1	4	—	14	10
111. A.—Ulcer of the stomach	1	5	—	6	1	5	2
B.—Ulcer of the duodenum	—	14	—	14	—	8	—
112. Other affections of the stomach	—	3	—	3	—	12	9
(*a*) Gastritis	1	52	1	53	—	284	115
(*b*) Dyspepsia, etc. ...	—	63	—	63	1	1,015	619
113 and 114. Diarrhœa and enteritis—							
A.—Under two years ...	—	39	4	39	2	720	632
B.—Two years and over	8	398	28	406	8	1,217	631
(*a*) Colitis	1	69	1	70	1	199	111
(*b*) Ulceration	—	4	1	4	—	2	—
(*c*) Other diseases ...	—	4	1	4	—	41	16
114*a* Sprue	—	—	—	—	—	—	—
115. Ankylostomiasis ...	3	181	13	184	3	166	58
116. Diseases due to intestinal parasites—							
(*a*) Cestoda (tænia) ...	—	75	—	75	—	930	278
(*b*) Tremotoda (flukes) ...	—	—	—	—	—	6	—
(*c*) Nematoda (other than ankylostoma ...	—	14	—	14	—	26	12
(i) Ascaris	3	168	10	171	2	849	602
(ii) Trichocephalus dispar	—	1	1	1	—	—	—
(iii) Trichina	—	—	—	—	—	1	—
(iv) Dracunculus ...	10	279	—	289	7	671	238
(v) Strongylus	—	3	1	3	—	10	4
(vi) Oxyuris	—	5	—	5	—	36	35

RETURN D—*continued.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1933–34.

DISEASES.	IN-PATIENTS.					OUT-PATIENTS.	
	Remaining in hospital on 31st March, 1933.	Yearly Total.		Total cases treated.	Remaining in hospital on 31st March, 1934.	Male.	Female.
		Admissions.	Deaths.				
VI.—*Diseases of the digestive system—(contd.)*							
116. Diseases due to intestinal parasites—*contd.*							
(*d*) Coccidia	—	—	—	—	—	1	1
(*e*) Other parasites ...	—	2	—	2	—	2	1
(*f*) Unclassified	—	10	2	10	—	26	3
117. Appendicitis	—	29	3	29	1	27	6
118. Hernia	15	217	22	232	9	386	12
119. A.—Affections of the anus, fistula, etc. ...	10	81	1	19	8	170	94
B.—Other affections of the intestines ...	—	25	6	25	1	50	20
(*a*) Enteroptosis ...	—	1	1	1	—	—	2
(*b*) Constipation ...	5	100	—	105	3	6,338	2,091
120. Acute yellow atrophy of the liver	—	—	—	—	—	—	—
121. Hydatid of the liver ...	—	—	—	—	—	—	—
122. Cirrhosis of the liver ...	—	—	—	—	—	5	—
(*a*) Alcoholic	—	2	2	2	—	—	—
(*b*) Other forms ...	—	35	11	35	2	30	8
123. Biliary calculus ...	—	—	—	—	—	—	1
124. Other affections of the liver	—	3	—	3	—	—	—
(*a*) Abscess	1	25	6	26	1	21	7
(*b*) Hepatitis	1	55	3	56	1	76	30
(*c*) Cholecystitis ...	—	6	1	6	2	12	4
(*d*) Jaundice	2	47	6	49	—	98	39
125. Diseases of the pancreas	—	1	1	1	—	—	1
126. Peritonitis (of unknown cause)	2	21	15	23	—	16	3
127. Other affections of the digestive system ...	—	15	7	15	—	52	16
VII.—*Diseases of the genito-urinary system (non-venereal).*							
128. Acute nephritis	7	76	23	83	4	81	63
129. Chronic nephritis ...	3	94	35	97	10	101	50
130. A.—Chyluria	—	—	—	—	—	2	—
B.—Schistosomiasis ...	12	143	7	155	9	358	72
131. Other affections of the kidneys	—	62	—	62	—	7	1
Pyelitis, etc. ...	1	35	2	36	2	24	18
132. Urinary calculous ...	1	9	—	10	1	6	2
133. Diseases of the bladder—Cystitis	2	104	3	106	7	216	176
134. Diseases of the urethra	—	—	—	—	—	42	10
(*a*) Stricture	11	168	4	179	12	272	2
(*b*) Other...	2	81	3	83	10	181	14
135. Diseases of the prostate—(*a*) Hypertrophy ...	—	1	—	1	1	5	—
(*b*) Prostatitis	2	29	—	31	—	108	—
136. Diseases (non-veneral of the genital organs of Man	1	4	—	5	1	1	—
(*a*) Epididymitis ...	—	40	—	40	3	98	—
(*b*) Orchitis	3	115	—	118	6	220	—
(*c*) Hydrocele	6	71	—	77	5	198	—
(*d*) Ulcer of penis ...	4	65	—	69	7	224	—
(*e*) Phimosis and paraphimosis	6	346	—	352	2	495	—
137. Cysts or other non-malignant tumours of the ovaries	1	10	—	11	1	—	29
138. Salpingitis	2	57	2	59	7	—	127
Abscess of the pelvis	—	21	—	21	3	—	75

RETURN D—*continued.*

RETURN OF DISEASES AND DEATHS (IN-PATIENTS) AND DISEASES (OUT-PATIENTS) FOR THE YEAR 1933–34.

DISEASES.	IN-PATIENTS.				OUT-PATIENTS.	
	Remaining in hospital on 31st March, 1933.	Yearly Total.		Remaining in hospital on 31st March, 1934.	Male.	Female.
		Admissions.	Deaths.	Total cases treated.		
VII.—*Diseases of the genito-urinary system (non-venereal) (contd.).*						
139. Uterine tumours (non-malignant)	3	31	3	34	2	— 67
140. Ulterine hæmorrhage (non-puerperal) ...	—	5	—	5	—	— 51
141. A.—Metritis	2	41	1	43	3	— 402
B.—Other affections of the female genital organs	5	31	4	36	3	— 139
(*a*) Displacements of uterus	—	18	—	18	2	— 110
(*b*) Amenorrhoea ...	—	3	—	3	—	— 215
(*c*) Dysmenorrhoea ...	1	25	—	26	1	— 417
(*d*) Leucorrhoea ...	1	27	—	28	1	— 133
142. Diseases of the breast (non-puerperal)	—	—	—	—	—	— 7
(*a*) Mastitis	—	23	—	23	3	5 89
(*b*) Abscess of breast ...	—	10	—	10	1	2 22
VIII.—*Puerperal State.*						
143. A.—Normal labour ...	9	597	2	606	24	— 418
B.—Accidents of pregnancy—						
(*a*) Abortion	1	115	2	116	1	— 135
(*b*) Ectopic gestation ...	—	4	2	4	—	— 1
(*c*) Other accidents of pregnancy ...	3	233	26	236	5	— 45
C.—Maternal welfare (ante-natal)	17	547	—	564	15	— 13,629
D.—Post-natal examinations—mothers and infant	1	24	—	25	1	1,188 4,031
144. Puerperal hæmorrhage	2	25	1	27	—	— 7
145. Other accidents of parturition	—	240	26	240	1	— 15
146. Puerperal septicæmia ...	—	34	3	34	—	— 6
147. Phlegmasia dolens ...	—	—	—	—	—	— 1
148. Puerperal eclampsia ...	1	7	2	8	—	— —
149. Sequelæ of labour ...	—	52	6	52	—	— 14
150. Puerperal affections of the breast	—	13	—	13	—	— 44
IX.—*Affections of the skin and cellular tissues.*						
151. Gangrene	3	25	8	28	3	173 16
152. Boil	5	84	1	89	—	879 284
Carbuncle	—	44	—	44	—	185 52
153. Abscess	17	418	8	435	21	710 267
(*a*) Whitlow	4	73	—	77	5	468 128
(*b*) Cellulitis	16	405	18	421	12	900 272
154. A.—Tinea	—	6	—	6	—	1,169 562
B.—Scabies	1	28	—	29	—	2,481 1,918
155. Other diseases of the skin	—	59	6	59	—	1,813 1,170
(*a*) Erythema	—	8	—	8	1	132 74
(*b*) Urticaria	1	19	—	20	—	376 176
(*c*) Eczema	1	19	—	20	—	896 439
(*d*) Herpes	—	14	—	14	1	125 41
(*e*) Psoriasis	—	1	—	1	—	32 9
(*f*) Elephantiasis ...	3	52	2	55	12	109 24
(*g*) Myiasis	—	1	—	1	—	6 8
(*h*) Chiggers	—	1	—	1	—	7 2
(*i*) Cutaneous leshmaniasis	—	1	—	1	1	— 1
(*j*) Ulcers	93	931	43	1,024	95	7,313 4,055

RETURN D—*continued.*

Return of Diseases and Deaths (In-Patients) and Diseases (Out-Patients) for the Year 1933–34.

Diseases.	In-Patients.					Out-Patients.	
	Remaining in hospital on 31st March, 1933.	Yearly Total.		Total cases treated.	Remaining in hospital on 31st March, 1934.	Male.	Female.
		Admissions.	Deaths.				
X.—*Diseases of bones and organs of locomotion (other than tuberculous).*							
156. Diseases of bones ...	1	4	—	5	—	25	7
(*a*) Osteitis	1	43	1	44	1	286	173
(*b*) Osteo-myelitis ...	7	24	3	31	1	37	27
157. Diseases of joints ...	—	1	—	1	—	2	—
(*a*) Arthritis	10	205	3	215	17	1,517	481
(*b*) Synovitis	6	107	—	113	4	282	77
158. Other diseases of bones or organs of locomotion ...	10	143	1	153	12	832	400
Fibrositis	2	8	—	10	—	264	67
XI.—*Malformations.*							
159. Malformations	—	5	—	5	—	8	6
(*a*) Hydrocephalus ...	—	1	—	1	—	5	5
(*b*) Hypospadias ...	—	—	—	—	—	—	—
(*c*) Spina Bifida, etc. ...	—	2	—	2	—	8	1
XII.—*Diseases of infancy.*							
160. Congenital debility ...	—	32	6	32	1	86	84
161. Premature birth ...	—	44	29	44	—	62	54
162. Other affections of infancy	3	64	14	67	—	508	426
163. Infant neglect (infants of three months or over) ...	—	7	3	7	—	24	24
(*a*) Newborn infants ...	19	658	50	677	22	46	43
XIII.—*Affections of old age.*							
164. Senility	—	7	2	7	1	58	11
Senile dementia ...	4	13	8	17	7	18	1
XIV.—*Affections produced by external causes.*							
165. Suicide by poisoning ...	—	2	2	2	—	—	—
166. Corrosive poisoning (intentional)	—	2	2	2	—	—	—
167. Suicide by gas poisoning	—	—	—	—	—	—	—
168. Suicide by hanging or strangulation ...	—	—	—	—	—	—	1
169. Suicide by drowning ...	—	—	—	—	—	—	—
170. Suicide by firearms ...	—	—	—	—	—	1	—
171. Suicide by cutting or stabbing instruments ...	—	1	1	1	—	—	—
172. Suicide by jumping from a height	—	—	—	—	—	—	—
173. Suicide by crushing ...	—	—	—	—	—	—	—
174. Other suicides	—	—	—	—	—	—	—
Attempted suicide ...	—	12	—	12	3	5	—
175. Food poisoning	—	8	—	8	1	8	1
(*a*) Botulism	—	6	—	6	—	—	—
176. Attacks of poisonous animals	—	1	—	1	—	—	—
(*a*) Snake bite	—	46	1	46	2	43	11
(*b*) Insect bite or sting ...	—	18	—	18	—	103	19
177. Other accidental poisonings	—	19	4	19	—	19	13
178. Burns (by fire)	3	63	9	66	5	212	121
179. Burns (other than by fire)	1	48	9	49	2	109	56
180. Suffocation (accidental)	—	2	—	2	—	—	2
181. Poisoning by gas (accidental)	—	—	—	—	—	7	1
182. Drowning (accidental) ...	—	1	1	1	—	—	—
183. Wounds (by firearms, war excepted)	4	125	15	129	8	73	9

RETURN D—*continued.*

Return of Diseases and Deaths (In-Patients) and Diseases (Out-Patients) for the Year 1933–34.

Diseases.	In-Patients.				Out-Patients.	
	Remaining in hospital on 31st March, 1933.	Yearly Total.		Total cases. treated.	Remaining in hospital on 31st March, 1934.	Male.	Female.
		Admissions.	Deaths.				
XIV.—*Affections produced by external causes (contd.).*							
184. Wounds (by cutting or stabbing instruments)	22	729	29	751	43	2,906	471
185. Wounds (by fall) ...	12	194	6	206	3	1,431	246
186. Wounds (in mines or quarries)	1	251	3	252	10	1,648	—
187. Wounds (by machinery)	1	10	1	11	1	269	19
188. Wounds (crushing, e.g. railway accidents, etc)	10	186	22	196	17	239	32
189. Injuries inflicted by animals, bites, kicks, etc.	4	81	1	85	5	245	72
190. Wounds inflicted on active service ...	—	—	—	—	—	—	—
191. Executions of civilians by belligerents	—	—	—	—	—	—	—
192. A.—Over-fatigue ...	—	5	2	5	1	37	23
B.—Hunger or thirst ...	2	45	10	47	2	10	11
193. Exposure to cold, frost bite, etc.	—	—	—	—	—	—	—
194. Exposure to heat ...	—	1	—	1	—	3	4
(*a*) Heatstroke	—	1	—	1	—	—	—
(*b*) Sunstroke	—	—	—	—	—	1	—
195. Lightning stroke ...	—	1	—	1	—	—	—
196. Electric shock	—	8	—	8	—	2	1
197. Murder by firearms ...	—	—	—	—	—	—	—
198. Murder by cutting or stabbing instruments	—	—	—	—	—	—	—
199. Murder by other means	—	—	—	—	—	3	—
200. Infanticide (murder of an infant under one year)	—	—	—	—	—	—	—
201. A.—Dislocation ...	1	33	—	34	5	39	16
B.—Sprain	2	88	—	90	2	640	170
C.—Fracture	34	399	32	433	49	311	77
202. Other external injuries	5	402	3	407	12	2,349	622
203. Deaths by violence of unknown cause ...	—	—	—	—	—	1	—
XV.—*Ill-defined diseases.*							
204. Sudden death (cause unknown)	—	—	—	—	—	—	—
205. A.—Diseases not already specified or ill-defined—							
(*a*) Ascites	1	32	8	33	2	57	25
(*b*) Œdema	7	31	—	38	—	73	35
(*c*) Asthenia	9	153	47	162	5	442	181
(*d*) Shock	2	12	3	14	—	4	4
(*e*) Hyperpyrexia ...	1	2	—	3	—	36	20
(*f*) Neuralgia and headache (undiagnosed) ...	—	9	—	9	—	282	88
(*g*) Other diseases ...	22	49	21	71	2	423	215
B.—Malingering ...	—	29	—	29	—	183	12
C.—Observation cases ...	5	143	1	148	8	197	70
D.—Pyrexia of uncertain origin	3	75	4	78	3	637	519
XVI.—*Diseases, the total of which have not caused ten deaths.*	3	29	—	32	—	16	20
Total ...	1,349	21,876	1,634	23,225	1,420	131,462	96,140

Surgical operations :—

Major 1,186

Minor 2,954

RETURN E.

	In-Patients.					Out-Patients.	
	Remaining on 31st March, 1933.	Admissions.	Deaths.	Total cases treated.	Remaining on 31st March, 1934.	Male.	Female.
Medical	1,194	20,235	1,427	21,429	1,257	113,284	75,351
Health Branch—							
Welfare Centres	42	1,180	170	1,222	46	17,998	20,744
Contagious Diseases Hospitals	113	461	37	574	117	180	44
	1,349	21,876	1,634	23,225	1,420	131,462	96,139

RETURN F.

Health Branch.

Analysis of the more important Conditions dealt with in the Out patients Department of the Child Welfare Clinics during 1933–34.

Disease.	Male.	Female.	Total.	Ratio to diseases due to all causes.
Malaria	6,276	5,989	12,265	31.65
Yaws	2,533	2,301	4,834	12.47
Diseases of infancy	552	490	1,042	2.68
Diseases of respiratory system	1,897	1,967	3,864	9.97
Parasitic skin diseases	805	1,028	1,833	4.73
Diarrhoea and enteritis	519	478	997	2.57
Constipation	334	350	684	1.76
Diseases of teeth, gums and mouth ...	302	290	592	1.52
Diseases of the eye	249	270	519	1.33
Whooping cough	323	379	702	1.81
Intestinal parasites	446	473	919	2.37
Ulcers	354	372	726	1.87
Injuries (external causes)	191	164	355	0.91
Dysentery	192	156	348	0.89
Measles	107	96	203	0.52
Diseases of lymphatic system	—	—	—	—
Other conditions	2,918	5,941	8,859	22.86
Total	17,998	20,744	38,742	—

APPENDICES.

APPENDIX I.

Government Hospital Bed Accommodation and Dispensaries, Gold Coast Colony, Ashanti, Northern Territories and British Sphere of Togoland, Medical Branch.

Colony. Eastern Province.	Hospital.		European.				African.				Dispensaries.	Medical staff (Medical officers and women Medical officers).	Remarks.
	European.	African.	Total beds at present.		Number of beds possible		Total beds at present.		Number of beds possble.				
			M.	F.	M.	F.	M.	F.	M.	F.			
Accra	1	1	15	3	15	3	166+11 cots	46+7 cots	166+11 cots	46+7 cots	2	5 (M.Os.)	
Accra Cantonments	—	1	—	—	—	—	6	—	6	—	1	1 (M.O.)	
Accra Maternity	—	1	—	—	—	—	—	38+28 cots	—	20+20 cots	—	1 (W.M.O.)	
Accra Princess Marie Louise Hospital	—	1	—	—	—	—	—	3+21 cots	—	6+28 cots	1	1 (W.M.O.)	A children's Hospital and Welfare Centre.
Accra Christiansborg	—	—	—	—	—	—	—	—	—	—	1	1 (W.M.O.)	Welfare Centre—closed.
Ada	—	1	—	—	—	—	4	4	4	4	1	1 (M.O.)	
Akuse	—	1	—	—	—	—	12	6	12	8	1	1 (M.O.)	
Keta	—	1	—	—	—	—	4	4	4	4	1	1 (M.O.)	
Kibi	—	1	—	—	—	—	14	6	14	6	1	1 (M.O.)	
Koforidua	—	1	—	—	—	—	13	6	13	6	1	1 (M.O.)	
Koforidua	—	—	—	—	—	—	—	—	—	—	1	1 (W.M.O.)	Welfare Centre.
Mpræso	—	1	—	—	—	—	8	6	8	8	1	1 (M.O.)	
Nsawam...	—	1	—	—	—	—	10	4	10	4	1	1 (M.O.)	
Total	1	11	15	3	15	3	237+11 cots	123+56 cots	237+11 cots	112+55 cots	13	17	

APPENDIX I.—*contd.*

GOVERNMENT HOSPITAL BED ACCOMMODATION AND DISPENSARIES, GOLD COAST COLONY, ASHANTI, NORTHERN TERRITORIES AND BRITISH SPHERE OF TOGOLAND, MEDICAL BRANCH.

COLONY CENTRAL PROVINCE.	HOSPITAL.		EUROPEAN.				AFRICAN.				Dispensaries.	Medical staff (Medical officers and women Medical officers).	REMARKS.
			Total beds at present.		Number of beds possible		Total beds at present.		Number of beds possible.				
	European.	African.	M.	F.	M.	F.	M.	F.	M.	F.			
Cape Coast	1	1	2	—	3	—	22	18	24	22	1	1 (M.O.)	
Cape Coast	—	—	—	—	—	—	—	—	—	—	1	1 Red Cross Sister.	Red Cross Welfare Centre.
Dunkwa	—	1	—	—	—	—	15	8	17	8	1	1 (M.O.)	
Elmina	—	—	—	—	—	—	—	—	—	—	1	1 (M.O.)	Visiting from Cape Coast.
Oda	—	1	—	—	—	—	12	4	12	4	1	1 (M.O.)	
Saltpond	—	1	—	—	—	—	8	4	8	4	1	1 (M.O.)	
Winneba	1	1	7	1	7	1	28	22+6 cots	32	28+6 cots	1	1 (M.O.)	
Total	2	5	9	1	10	1	85	56+6 cots	93	66+6 cots	7	7	

APPENDIX I.—*contd.*

GOVERNMENT HOSPITAL BED ACCOMMODATION AND DISPENSARIES, GOLD COAST COLONY, ASHANTI, NORTHERN TERRITORIES AND BRITISH SPHERE OF TOGOLAND, MEDICAL BRANCH.

COLONY.	HOSPITAL.		EUROPEAN.				AFRICAN.				Dispensaries.	Medical staff (Medical officers and women Medical officers).	REMARKS.
			Total beds at present.		Number of beds possible		Total beds at present.		Number of beds possible.				
WESTERN PROVINCE.	European.	African.	M.	F.	M.	F.	M.	F.	M.	F.			
Axim	1	1	6	—	6	—	12	4	12	4	1	1 (M.O.)	
Chama	—	—	—	—	—	—	—	—	—	—	—	1 Red Cross Sister.	Red Cross Welfare Centre.
Sekondi	—	1	—	—	—	—	46+2 cots	9+2 cots	46+2 cots	9+2 cots	1	2 (M.Os.)	
Sekondi	—	—	—	—	—	—	—	—	—	—	1	1 Red Cross Sister.	Red Cross Welfare Centre.
Takoradi	1	—	16	4	16	4	—	—	—	—	1	1 (M.O.)	
Tarkwa	—	1	—	—	—	—	7	4	7	4	—	1 (M.O.)	
Wiawso	—	1	—	—	—	—	7	1	11	4	1	1 (M.O.)	Visited occasionally by M.O.
Total	2	4	22	4	22	4	72+2 cots	18+2 cots	76+2 cots	21+2 cots	5	8	

APPENDIX I.—*contd.*

GOVERNMENT HOSPITAL BED ACCOMMODATION AND DISPENSARIES, GOLD COAST COLONY, ASHANTI, NORTHERN TERRITORIES AND BRITISH SPHERE OF TOGOLAND, MEDICAL BRANCH.

ASHANTI.	HOSPITAL.		EUROPEAN.				AFRICA				Dispensaries.	Medical staff (Medical officers and women Medical officers).	REMARKS.
	European.	African.	Total beds at present.		Number of beds possible		Total beds at present.		Number of beds possible.				
			M.	F.	M.	F.	M.	F.	M.	F.			
Bekwai	—	1	—	—	—	—	6	4	6	4	1	1 (M.O.)	
Kumasi	1	1	11	2	11	2	116	26+5 cots	116	26+2 cots	1	3 (M.Os.)	
Kumasi	—	1	—	—	—	—	—	10+20 cots	—	10+18 cots	1	1 (W.M.O.)	Welfare Centre.
Sunyani	—	1	—	—	—	—	16	4	16	4	1	1 (M.O.)	
Total	1	4	11	2	11	2	138	44+25 cots	138	44+20 cots	4	6	

APPENDIX I.—*contd.*

GOVERNMENT HOSPITAL BED ACCOMMODATION AND DISPENSARIES, GOLD COAST COLONY, ASHANTI, NORTHERN TERRITORIES AND BRITISH SPHERE OF TOGOLAND, MEDICAL BRANCH.

NORTHERN TERRITORIES.	HOSPITAL.		EUROPEAN.				AFRICAN.				Dispensaries.	Medical staff (Medical officers and women Medical officers).	REMARKS.
	European.	African.	Total beds at present.		Number of beds possible		Total beds at present.		Number of beds possible.				
			M.	F.	M.	F.	M.	F.	M.	F.			
Fawku	—	1	—	—	—	—	6	—	9	—	1	1 (M.O.)	
Lawra	—	1	—	—	—	—	12	6	12	6	1	1 (M.O.)	
Navrongo	—	1	—	—	—	—	8	4	12	4	1	1 (M.O.)	
Salaga	—	1	—	—	—	—	8	2	8	2	1	1 (M.O.)	
Tamale	1	1	4	2	4	2	37	8+3 cots	37	8+3 cots	1	2 (M.Os.)	
Wa	—	1	—	—	—	—	13	5	13	5	1	1 (M.O.)	
Zuarungu	—	—	—	—	—	—	—	—	—	—	1	—	Visiting from Navrongo.
Total	1	6	4	2	4	2	84	25+3 cots	91	25+3 cots	7	7	

APPENDIX I.—*contd.*

GOVERNMENT HOSPITAL BED ACCOMMODATION AND DISPENSARIES, GOLD COAST COLONY, ASHANTI, NORTHERN TERRITORIES AND BRITISH SPHERE OF TOGOLAND, MEDICAL BRANCH.

BRITISH SPHERE OF TOGOLAND.	HOSPITAL.		EUROPEAN.				AFRICAN.				Dispensaries.	Medical staff (Medical officers and women Medical officers).	REMARKS.
			Total beds at present.		Number of beds possible		Total beds at present.		Number of beds possible.				
	European.	African.	M.	F.	M.	F.	M.	F.	M.	F.			
Ho	—	1	—	—	—	—	13	5	14	5	1	1 (M.O.)	Visited occasionally by M.O.
Kete Krachi	—	—	—	—	—	—	—	—	—	—	1	1 (M.O.)	
Yendi	—	1	—	—	—	—	9	10	10	10	1	1 (M.O.)	
Total	—	2	—	—	—	—	22	15	24	15	3	3	
Grand Total	7	32	61	12	62	12	638+13 cots	281+92 cots	659+13 cots	283+86 cots	39	48	

*The number of beds possible is a variable figure. It can in case of outbreak be largely increased.

APPENDIX I.—*contd.*

Government Hospital Bed Accommodation and Dispensaries, Gold Coast Colony, Ashanti, Northern Territories and British Sphere of Togoland, Medical Branch.

Colony. Contagious Diseases Hospitals.	Hospital.		European.				African.				Dispensaries.	Medical staff (Medical officers and women Medical officers).	Remarks.
	European.	African.	Total beds at present.		Number of beds possible		Total beds at present.		Number of beds possible.				
			M.	F.	M.	F.	M.	F.	M.	F.			
Accra (Labadi)	1	1	—	—	4	—	30	24	59	82	—	1 (M.O.H.)	Visiting.
Ada	—	1	—	—	—	—	—	—	4	4	—	1 (M.O.H.)	Visiting.
Cape Coast	—	1	—	—	—	—	5	4	13	13	—	1 (M.O.H.)	Visiting.
*Keta	—	1	—	—	—	—	—	—	4	2	—	1 (M.O.H.)	Visiting.
Koforidua	—	—	—	—	—	—	—	—	—	—	—	—	
Kumasi	—	1	—	—	—	—	24	—	66	—	—	1 (M.O.H.)	Visiting.
Saltpond	—	1	—	—	—	—	2	—	4	—	—	1 (M.O.H.)	Visiting.
Sekondi	—	1	—	—	—	—	1	—	26	24	—	1 (M.O.H.)	Visiting.
Tarkwa	—	1	—	—	—	—	—	—	6	—	—	1 (M.O.H.)	Visiting.
Winneba	—	1	—	—	—	—	—	—	2	2	—	1 (M.O.H.)	Visiting.
Total	1	9	—	—	4	—	62	28	184	127	—	9	

*This hospital is being used at present as an emergency general hospital pending the completion of a new general hospital to take the place of one washed away by the sea.

APPENDIX II.

Leper Settlement, Ho, 1933-34.

Staff :—

(*a*) *European*—One Medical Officer—part-time ;

(*b*) African—One African Superintendent, one Head Dresser, three Assistant Dressers.

Apart from the Superintendent, the African staff are lepers trained in nursing duties.

Buildings.—An excellent bush house size 26 feet long by 18 feet wide with thatched roof and cement floor has been built for the Syrian leper. All the houses in the Settlement have been rethatched this year and the agoe beams replaced where necessary. The wall between the store and the dressing shed which fell down has been rebuilt with stones and cement.

Work Done.—Work has been continued on former lines. Three hundred and seventy-five lepers received treatment during the year—an increase of forty-six over 1932-33. The drugs used were Moogrol, Hydnocarpus Oil and Alepol. A definite improvement was noted in some of the earlier cases.

The inmates of the Settlement come from Togoland and the Trans-Volta Districts.

Employment.—The able-bodied lepers make their own farms, and the various trades of weaving, carpentry, shoemaking, basket weaving, wood carving and pottery are being carried on.

Maintenance.—All the lepers are subsisted at the rate of 3d. per diem with the exception of 20 lepers who are totally incapacitated. These receive $4\frac{1}{2}$d. per diem.

Education.—The work at the Ewe Presbyterian and Roman Catholic schools is still being carried on. There are five leper school-masters who teach twenty-eight leper children.

Sanitation.—The sanitary condition of the Settlement is satisfactory. Three scavengers are employed . Pan latrines are in use and the night-soil is emptied into fly-proof pits. There are four incinerators in use at the Settlement.

Water Supply.—The water supply is scanty and fails entirely during the months of December, January and February. At this time the lepers have to fetch their water from the town supply. It is hoped to extend the Ho pipe-line to the Settlement when funds are available.

Statistics :

Treated during the year	375
Remaining in the Settlement on 31st March, 1933	289
Admitted during the year	86
Leave	38
Ran away	2
Discharged	1
Died	7
Remaining in the Settlement on 31st March, 1933	327

P. L. GRAY,
Medical Officer.

APPENDIX III.

Annual Report on the Maternity Hospital—1933-34.

Staff :—

1 Medical Officer.

2 Nursing Sisters.

1 Staff Nurse-Midwife, lent by the Health Branch from 7th June, 1933 to 31st December, 1933.

3 2nd Division Nurses undergoing midwifery training.

6 Midwives-in-Training.

6 Nurses-in-Training.

18 Unpaid Probationer Pupil Midwives have commenced their training during the financial year. Six of these have left owing to their unsuitability.

Buildings.

The new Isolation Block has been erected and was opened in the beginning of February, 1934. The building contains double-bedded rooms of convenient size, with a ward-kitchen, bathroom and W.C., also a labour room with its own entrance on the hospital drive for the admission of septic cases. The block is connected with the main building by a raised cement passage-way for the conveyance of patients by stretcher and trolley. The equipment was purchased by the Gold Coast Branch of the British Red Cross Society, £200 towards the cost having been generously donated by the Accra Town Council.

This block has greatly improved conditions for the treatment of septic cases and the prevention of the spread of infections and the teaching of abnormal midwifery, in addition to providing six extra beds.

However, the main building still remains congested and many cases have to be discharged from the hospital to continue their treatment as out-patients in order to give room for more urgent cases. The local Red Cross realizing the need for further extension is energetically collecting funds for the erection of a new block providing beds for ante-natal treatment.

Progress.

The work of the Maternity Hospital during the last year has shown marked progress in two directions, viz. :—

1. The extension of the training school from 12 to 26-30 pupils. Thus the hospital is serving not only the needs of the Accra district but indirectly through its pupils the whole Colony and Ashanti.

The first Northern Territories pupil is expected to commence her training before another two years has elapsed.

2. The obtaining of better results from the attendances at the ante-natal clinics, and the stricter supervision of ante-natal advice and treatment.

The Work of the Certificated Midwives.

There has been an increase in the number of cases delivered on district by the certificated midwives.

1932-33	616	1933-34	876

There has been no increase in the number of certificated midwives owing to the to the fact that two newly qualified filled vacancies resulting from resignations. A new district has been opened at Labadi by the granting of a subsidy to a midwife living there.

Ante-natal record books have been introduced, in which the midwives book the name and address and all particulars of the patients whose confinements they will attend on district.

At the ante-natal clinics at the Maternity Hospital at which these midwives attend great stress has been laid on the early diagnosis of abnormal cases and the detection of ailments of pregnancy. Every encouragement and facility is given to those district midwives, both subsidised and salaried, to keep in touch with the hospital teaching and at the same time to meet, and book for district attendance, as many cases as possible.

Unfortunately supervision of the actual cases on district in Accra is sadly lacking. Neither the Health Branch nor the Maternity Hospital can at present provide this urgent need.

The Training of Midwives.

Three pupils gained the Central Midwives Board Certificate in the July, 1933, examination, and left the hospital to practise midwifery. There are nine pupils expected to sit the July, 1934, examination and with the large increase of pupils, in the future six to ten candidates should gain this certificate every year.

A scheme providing a hostel for the pupil midwives has been proposed. Government intends to provide a matron, a cook and two labourers. There is no doubt that this will attract many more would-be midwives from areas outside the Accra district and appreciably improve the living conditions of the pupil midwives.

Treatment of patients.

	1932–33.	1933–34.
Attendances at Ante-natal and Post-natal Clinics	14,394	13,364
In-patients Admissions	1,393	1,286
Deliveries	772	625
Fees	£880 4s. 1d.	

Wassermann Reaction.

Total number examined (out-patients and (in-patients)	1,241	1,406
Number with double plus reaction	275	370
Number with single plus reaction... ...	124	206
Number with negative plus reaction ...	842	830

Malaria.

Total number of cases examined (out- and in-patients)	1,341	1,376
Total number of cases showing malaria parasites	387	1,164
Total number of cases negative to malaria	954	212

Analysis of Cases.

In-patients admissions	1,393	1,286
Admitted for ante-natal treatment ...	497	534
Labour cases	772	625
Abortions	52	46
Post-natal complications	46	41
Infants	41	32
Other cases	41	8
Total deliveries	772	625
Living infants	698	552

Ante-natal Work.

There has been a satisfactory improvement in the results achieved from the attendances of expectant mothers at the ante-natal clinics. To persuade the women of this country to attend a hospital or clinic in order to obtain medicine to drink during the early and middle months of their pregnancy is a very much more simple task than to obtain any good results from their attendances.

This is evident from the fact that many patients attend regularly from the third to the seventh month. After that they proceed to bush to stay with relatives for their confinement in spite of the advice of the doctor, the midwives and health visitors, who are continually stressing the importance of more regular and more frequent attendance during the last six weeks. In most cases, it is beyond their

comprehension to connect ante-natal advice and treatment with prevention of obstetrical difficulties, and this is wherein lies the value of competent and conscientious midwives and health visitors. Without them the money spent on maternity work in this country is like the proverbial drop in the ocean.

The Health Branch through the work of the health visitors has given invaluable help to this side of ante-natal advice. The nursing sister from the Princess Marie Louise Hospital attends the Maternity Hospital weekly in order to obtain names and addresses of defaulting patients and she and her health visitors have tracked down many an old patient and brought many a new patient to the ante-natal clinics, who would otherwise have been lost to the midwives or the Maternity Hospital.

The visiting of the ante-natal cases and the attendances at their confinements on the district of Kawli Bu and Kawli Gono has been allotted to the pupil midwives at the Maternity Hospital.

During the last six months of her training each pupil midwife devotes a whole month to district visiting and attendances at confinement cases in this particular district. Valuable experience is thereby gained by the nurse and valuable treatment and advice by the patient.

Toxæmia of Pregnancy.

Albuminuria.

There were 64 cases of albuminuria of pregnancy with and without other toxæmic signs, including 10 cases of eclampsia and excluding cases of schistosomiasis, bacilluria, cystitis and albuminuria due to fever and debility. Those cases in which eclampsia was not present on admission all responded to treatment excepting two in which a toxæmia of pregnancy was superimposed on a chronic nephritis; in one of these eclampsia developed during the course of labour induced by bougies in hospital. The patient recovered successfully and the chronic nephritis was much improved on discharge from hospital. The other case was delivered successfully on district with no ill-effects but there was very little improvement in the nephritic condition when last seen four weeks after delivery.

Eclampsia.

Short summary of 10 cases eclampsia.

Incidence 0.7 per cent of total admission.

Five ante-and intra-partum cases of eclampsia.

Five post-partum cases of eclampsia.

Three cases were admitted with eclamptic fits who had never attended an ante-natal clinic. One of these died half an hour after admission, another on the third day after delivery and one day after admission to hospital, and the third case recovered.

Of the remaining seven who had attended the ante-natal clinic, one has been mentioned under albuminuria of pregnancy, two were very mild post-partum cases with only one fit, blood pressure very slightly raised and albumen never above 0.1 per cent. The diagnosis of eclampsia was doubtful but routine treatment for eclampsia was given.

Four cases occurred in patients who had been attending the ante-natal clinic, but had not been seen during the two weeks preceding the onset of eclampsia. The number of fits ranged between 4 and 14. The blood-pressure, systolic 130-200 m.m. Hg., diastolic 90-120 m. Hg., albumen 0.3-0.5 per cent according to an Esbach's albuminometer. All recovered with routine treatment, namely, morphia gr. $\frac{1}{4}$ hypodermically, stomach washout and rectal washout under general anæsthesia, leaving in the stomach and bowel two ounces each of a mixture of mag. sulph and pot brom. and chloral, 10 c.c. of a 10 per cent solution of mag. sulphate intramuscularly into the buttocks. All treatment is repeated four hourly if there is recurrence of fits. If no fits, fluids by mouth triple plus, saline purgatives and diuretics and a sedative mixture four-hourly for 72 hours. No interference with labour except a hastening of delivery by quinine or forceps after full dilatation of the cervix. In all four cases the children were born alive.

Vomiting of Pregnancy.

There were seven cases. All except one showed mild signs of toxæmia which responded to treatment. One was a severe case who had a history of gastric ulcer. Therapeutic abortion was performed. Vomiting ceased almost immediately and the patient was discharged well.

Anæmias.

There were nineteen cases of severe anæmia with five deaths. Severe cases being considered those with a red blood cell count of 1,000,000 or less per c.c.m. blood and haemoglobin under 20 per cent. The colour index in all but three was under one. This high colour index was not present in any of the fatal cases.

It is necessary to see a much larger number of cases with more accurate clinical and pathological data before a final conclusion can be reached as to the existence in the pregnant women of this country of a primary anaemia due to a toxaemia of pregnancy. Nevertheless, the fact must not be overlooked that the incidence of anaemia among these women is probably much higher than among the non-pregnant women. Strict ante-natal supervision is necessary in order to diagnose the condition early and more stress must be laid upon the need for good food by those responsible for ante-natal advice.

Presentations.—Six hundred and forty-four including 19 pairs of twins.

Vertex :	
V,LOA	375
V,ROA	180
V,ROP	10
V,LOP...	6
POP	13
Vertex unclassified	10
Breech :	
L.S.A.	10
R.S.A.	4
Breech unclassified	23
Face :	
L.M.A.	1
R.M.P.	1
L.M.P.	1
Face unclassified	1
Transverse	6
B.B.A	3

Operations.

Surgical Inductions		66
Forceps Deliveries		69
(*a*) Normal vertex presentation	24	
(*b*) After manual rotation of occiput	41	
(*c*) On after coming head	4	
Manual Extraction of child in abnormal presentation		13
(*a*) Breech with extended legs	4	
(*b*) Breech with extended legs and arms	4	
(*c*) Breech with delay in after coming head	3	
(*d*) Malrotation of occiput		2
Internal version and manual extraction		4
Destructive operations of foetus		13
(*a*) Perforation of foetal skull	2	
(*b*) Perforation, and craniotomy	8	
(*c*) Perforation craniotomy and embryotomy	8	
(*d*) Decapitation	1	
Caesarean section		6
Abdominal section for		9
(*a*) Laparotomy and drainage for general peritonitis	4	
(*b*) Removal of ectopic pregnancy	4	
(*c*) Repair of ruptured uterus	1	

Hysterectomy		1
Pelvic drainage through vagina		1
Uterine exploratory operations		45
(*a*) Dilatation and curettage for sterility	7	
(*b*) Exploration and removal of retained products of abortion ...	12	
(*c*) Manual removal of placenta	25	
(*d*) Removal of hydatidiform mole	1	
Plugging of cervix and vagina for haemorrhage	1	
Reparative operations on mother		87
Perineal repair	57	
Vaginal repair	6	
Cervical repair	6	
Episiotomy	16	
Vaginoplasty	2	
Drainage of breast abscess		3
Circumcision		9

Notes on Lower Uterine Segment Caesarean Section Operations.

The classical operation was performed in only one of the six cases. In the remaining five the lower uterine segment incision was employed.

In all five cases the patient had already been in labour several hours before Caesarean section operation was considered necessary for disproportion with non-entrance of the fœtal head into the pelvic brim. In three, unskilled interference before admission could not be eliminated. The other two had received medical and surgical induction by bougies for the purpose of test labour. At least one internal vaginal examination had been made on each case.

Four were successful. Two had no signs of a morbid puerperium. The other two ran temperature during the first week after the operation, one due to a bacillus coli bacilluria of old standing origin, and the other had been suffering from fever, jaundice and vomiting for a week before labour commenced. Neither had suppuration from the abdominal wound. One died from general peritonitis. She was a Kroo woman, a primipara, who had been advised to attend for admission and induction of labour at the thirty-sixth week, but she had disregarded the advice. The diagonal conjugate measured $3\frac{1}{4}$ in. and the true conjugate was estimated to have been $2\frac{3}{4}$ in. Per abdomen, a breech presentation with extended legs and a large head was diagnosed. The operation was performed sixteen hours after labour had commenced and one hour after admission to hospital. Therefore abdominal preparation was very inadequate and the general condition of the patient showed marked exhaustion. The immediate recovery from the operation was good but signs and symptoms of general peritonitis appeared on the third day and the patient died on the fourth day without further laparotomy and drainage which might have helped.

The number of cases is very small but nevertheless the advantages of this type of operation over the classical incision have been noticeable. The time taken is much shorter, the last one from the original skin incision until the completion of the last skin stitch covered a period of 25 minutes only. The abdominal wound is entirely sub-umbilical. The uterine wound is a horizontal curve over the easily recognised lower segment with the concavity of the curve upwards. The hæmorrhage is less and easily drains out of the abdominal wound. The bowels are well away from the site of the operation. The presenting part may be grasped and drawn into the wound by manual traction or levering with one blade of the obstetric forceps. The delivery through this uterine wound is slow and deliberate, the movements performed being identical with delivery through the vaginal outlet. The resulting uterine wound after delivery of child and placenta is seldom more than $2\frac{1}{2}$-3 in. and is easily and quickly sutured with no fear of sutures slackening from retraction of the uterine muscle. Seepage of lochia from this wound is less likely to reach the general peritoneum than that from the wound in the classical operation.

MORBIDITY.

Analysis of Morbidity :—

Septicaemia	8
Staphylococcus	1
Bacillus coli	1
Haemolytic streptococcus	3
Bacillus welchii	2
Colostridium septique	1
Sapraemia	64
The organisms were cultured in 35 cases :	
Haemolytic streptococcus 19 cases	
Non-haemolytic streptococus 11 cases	
Bacillus coli 5 cases	
No pathological report obtained in 29 cases.	
Ruptured uterus	2
General peritonitis	5
Eclampsia	2
Pelvic abscess	1
Toxaemia	2
Caesarean section	4
Typhoid	1
Lobar pneumonia	2
Arthritis	1
Stomatitis	1
Malaria	15
Breast affections	6
Unknown causes	2

There were 116 cases of morbid puerperium according to the British Medical Association standard. Sapræmia accounts for 64 and septicæmia 8 of these cases. 32 suffered from pyrexia during the pueperium due to causes other than puerperal sepsis.

Of the 84 cases of puerperal sepsis :—

Fourteen occurred in normal labour cases delivered in hospital.

Two occurred in normal abortion cases delivered in hospital.

Fifty-seven occurred in cases of obstetric emergency or complicated labour admitted to hospital after labour had commenced.

Four occurred in cases of complete or incomlete abortion before admission to hospital.

Seven occurred in cases of retained placenta on district.

Cases of Puerperal Septicæmia.

This condition is not common among the women of this country and almost never occurs without some grave obstetric complication or extreme anæmia and debility.

Three cases occurred after retained placenta on district with unskilled interference. Of two of these the blood cultures were positive to the hæmolytic streptococcus and one to colostridium septique.

One case occurred in a patient who was admitted for obstructed labour due to vaginal adhesion from a previous pelvic cellulitis from which she had suffered at her last confinement ; the blood culture was positive to the hæmolytic streptococcus which had also been present in her blood during her previous puerperium. The vaginal adhesions were broken down, the pelvis drained. The patient died in the third week.

One case occurred after ruptured uterus. Laparotomy, repair of uterine wall and drainage was performed. The patient appeared to improve but died on the ninth day due to a bacillus welchii septicæmia.

One case occurred after obstructed labour due to transverse presentation with prolapsed arm. Admitted to hospital on the third day of labour. Delivery effected by version and manual extraction ; the patient lived for one week after delivery. Blood culture positive to bacillus welchii.

One case occurred in a very anæmic patient, R.B.C. 9,701,000 per c.c., H.B. 15 per cent, who delivered on the road outside the hospital. Blood culture was positive to bacillus coli. The patient was discharged from hospital after six weeks, quite recovered.

One case occurred in a patient admitted for delay in birth of second twin. The blood culture was positive to staphylococcus aureus. The patient ran a swinging septic temperature with rigors for three weeks. She developed a staphylococcal pneumonia and was eventually taken away moribund by her relatives at the beginning of the fourth week of the illness.

There were no recoveries among the hæmolytic streptococcal septicaemias nor those of bacillus welchii. If the patients with these septicaemias recover from the immediate obstetric shock, they appear to survive for one to three weeks only and eventually succumb to the toxæmia. Anti-streptococcal and anti-gas gangrene serum, intravenous N.A.B., intravenous iodine, Omnadin and autogenous vaccine have all been tried with no conclusive evidence as to their value.

MATERNITY HOSPITAL.

	1932–33.	1933–34.
Maternal Deaths	29	28
Analysis of Cases :		
Anaemia of pregnancy		5
Puerperal septicaemia		5
Obstetric shock		5
General peritonitis		5
Eclampsia		2
Ruptured uterus		2
Ruptured tubal preganancy		2
Post-partum haemorrhage		1
Lobar pneumonia		1
2.2% of total admissions.		
24 emergency cases, i.e., not attending ante-natal clinic and admitted for obstetric emergency.		
4 cases attending ante-natal clinic.		
Infant Deaths		50
Analysis of Cases :		
Prematurity		24
Cerebral haemorrhage due to birth injury		5
Congenital debility due to disease of mother		15
Haemorrhagica neonatorum		4
Hydrocephalus		1
Congenital syphilis		1
7.8 % of total births in hospital.		
10 children of ante-natal cases.		
40 children of emergency cases.		
Analysis of Stillbirths :		99
Anencephaly		2
Dystocia of mother		65
(*a*) Ruptured uterus	2	
(*b*) Obstructed labour	12	
(*c*) Prolonged labour	14	
(*d*) Abnormal presentation	5	
(*e*) Ante-partum haemorrhage	2	
Prolapsed cord		4
Macerated foetus		10
Prematurity		7
Post-maturity		2
Congenital syphilis		2
Disease of mother		5
Ectopic pregnancy		1
Monster		1
15% of total births.		
80 in emergency cases. 19 in normal labour cases.		

M. K. LAWLOR,
Woman Medical Officer,
Maternity Hospital.

APPENDIX IV.

A Case of Acute Rheumatism.

On 5/2/34 Emmanuel Adams, schoolboy, aged 14 years, attended the out-patient department of the Gold Coast Hospital, Accra, complaining of pain and swelling of both knee and both ankle joints with accompanying fever and malaise, which had lasted five days. Examination disclosed swelling, marked tenderness and limitation of movements of knee and ankle joints. There was no evidence of yaws, the urine was clear and the heart shewed a slight degree of tachycardia but no evidence of any gross lesion. The patient's parents did not wish him to come into hospital.

On 13/2/34 he again reported at the out-patient department. His symptoms were now more severe and he was persuaded to become an in-patient.

Previous History.—In June, 1933, patient developed severe pain in shoulder joints and a few days later both knee and both ankle joints became involved. The attack lasted six weeks during which period patient was confined indoors and received treatment with native medicines. All symptoms disappeared, he apparently became quite fit and returned to school.

About 8/1/34, the joint pains began to return and became so severe as to necessitate again his remaining at home. Later, in the beginning of February local treatment having proved unsatisfactory he came to hospital. Up to June, 1933, he had always enjoyed good health, had never suffered from sore throat, præcordial pain or any other cardiac disturbance. He denied a history of yaws, dysentery, or urethral infection and stated he played the same games as did his class-mates. The boy himself was very bright and intelligent and had always received good school reports.

Family History.—Father and mother both alive and in good health, two brothers and two sisters also quite healthy, no history of any similar illness amongst them or the nearest relatives.

Clinical Examination :—

Joints.—Those affected shewed localised swelling with synovial effusion and heat and redness of the parts.

Cardiovascular System.—The heart was enlarged with the apex beat half an inch outside the nipple line in the fifth inter-space. There was a loud, harsh, systolic murmur in the mitral area propagated outwards, the pulmonary second sound was accentuated, the remaining heart sounds being rather soft.

Blood Film.—No malarial or other parasites seen.

Red cells	... ...	4,540,000 per cmm.
White cells	... ...	13,200 per cmm.
Polymorphs	... ...	61 per cent
Colour index	... ...	0.7

Blood culture.—Negative.

Wassermann Reaction.—Negative.

Alimentary System.—Tongue furred, fauces, tonsils and teeth nil, abdomen flaccid, spleen not palpable, liver not palpable, *fæces* nil abnormal of note.

Genito-urinary System.—Nil of note, prostate normal, urine trace of albumin only, nil else abnormal noted.

Respiratory System.—Nothing abnormal noted.

Nervous System.—Nothing abnormal noted.

Skin.—No rashes, petechiae, etc., were present. There was no definite sour odour resulting from perspiration and no " rheumatic nodules " were observed.

PROGRESS :—

A few days after admission the acute stage passed off, and the temperature, joint pains and swellings gradually subsided. The condition of the heart shewed no improvement, and occasionally a patch of pericardial friction, about the size of a crown piece, was heard just to the left of the sternum from the third to the fifth ribs.

On 19/3/34, five weeks after admission, patient had a relapse and his temperature rose to 104°F, remained there until 26/3/34, and then slowly fell again to reach 98°F. on 2/4/34. The respiratory rate rose to 50 per minute and remained thus throughout, albuminuria and acetonuria developed, and the urinary output over a period of 24 hours fell to approx. 20 ozs. and never rose again much above that level. About 29/3/34 acute cardiac failure with dyspnoea, oedema of the lower extremities, oedema and congestion of the lungs and praecordial pain developed. Patient sank rapidly and eventually died on 2/4/34, seven weeks after admission into hospital.

COMMENTARY :—

Clinical picture, the severe involvement of the heart, the joints affected, the polymorphonuclear leucocytosis and the response to the exhibition of salicylates at once suggest a diagnosis of rheumatic fever. With regard to the differential diagnosis we have to consider, and exclude, the following: pyaemia, acute septicaemia, gonococcal and dysenteric arthritis, yaws, gout, acute osteo-arthritis, acute osteomyelitis and malignant endocarditis.

The absence of rigors and acute generalised systemic disturbance, accompanied by non-suppurative joint changes, and the negative blood culture rule out pyaemia and acute septicaemia. A careful study of the various clinical findings, the severe cardiac involvement and the rapidly fatal termination exclude yaws, gout, acute osteomyelitis.

The joint clinical picture does not resemble a gonococcal arthritis nor was any evidence of gonococcal infection of the genito-urinary tract elicited. The strictly limited localisation of the pains, the tenderness, and the swellings to the particular joints affected, the apyrexia and the negative blood culture are all against acute osteomyelitis. The absence of any signs of embolism (i.e. the absence of petechiae, etc., of the skin, of enlargement of the spleen), the negative blood culture, and the response to salicylate all help to rule out malignant endocarditis.

It is of interest to note in this case the marked degree of cardiac involvement in comparison with the minor joint disturbance throughout, and also the third exacerbation of symptoms which led so rapidly to a fatal termination.

In conclusion, I have to thank Dr. MacRae, the resident medical officer, Gold Coast Hospital, for his kind permission to write up this case, Drs. MacRae and Greer for their very helpful criticism, and also the staff of the Medical Research Institute for their kind assistance.

C. J. S. O. TAYLOR,
African Medical Officer.

APPENDIX V.

A Case of Lympho-Sarcoma Causing Intussusception.

Djagbley :—

Female child, age 10, admitted Gold Coast Hospital, 31/1/34.

History.—The father of the child, an intelligent artisan from a village near Accra, stated :

(1) that his daughter had become ill three weeks before he brought her to hospital ;

(2) that the illness began with an attack of abdominal pain accompanied by vomiting, and

(3) that constipation was at first marked and vomiting was intermittent.

There was no previous history of illness elicited, and no history of similar illness in his family.

Examination.— The child looked very ill, was very wasted and anxious looking. Eyes were sunken ; no ocular jaundice visible. Tongue furred ; no marked tonsillar enlargement. Skin healthy looking with marked loss of subeutaneous fat. No glandular enlargement noted. Ribs prominent ; and abdomen slightly protuberant but not markedly so.

Chest.—Heart, nothing abnormal noted.

Lungs, nothing abnormal noted.

Sputum negative for B. tuberculosis.

Abdomen.—No rigidity of abdominal wall. No tenderness on palpation. Liver apparently normal in size and not tender. Spleen palpable and not tender.

Some thickening of the colon was present and a small mass not unlike a mass of tubercular glands palpable below and to right of umbilicus.

Digital rectal examination revealed nothing abnormal.

Sigmoidoscopic examination revealed nothing abnormal.

No ova or pathogenic ameobæ found in fæces. A few white cells and numerous flagellates were present.

Genito-urinary.—No tenderness or enlargement of kidneys was noted on palpation. Urine showed a trace of albumen, a few leucocytes and some epithelial cells.

Circulatory.—Nil abnormal noted. No parasites present in the blood.

Nervous.—Nil abnormal noted.

The child was put on fluids and, in view of the absence of any acute symptoms, kept under observation for a period. Her appetite was fair, liquid faeces were passed regularly twice or thrice each day for 12 days, except on two occasions. No pain on passing stool was complained of.

Her general condition steadily improved.

Differential diagnosis lay between a chronic intussusception and tubercular peritonitis, and on 12/2/34 laparotomy was decided on.

Operation was performed on 13/2/34, incision being a sub-umbilical, right paramedian incision.

A chronic intussusception of the ileum was found.

The segment involved was reduced without too great difficulty as the gut was not distended and the wall apparently healthy.

Further examination of the affected segment revealed presence of a mass, the size of two-shilling piece in the mucosa with nearby smaller scattered masses ranging from the size of a shilling to a sixpence.

Approximately six inches of gut was excised and a lateral anastomiasis done and the abdomen closed.

Post-operative convalescenc was uneventful and the immediate results of the operation were good.

The child was discharged from hospital on 12/3/34.

The Pathologist's report on a section of the affected bowel was lympho-sarcoma—numerous mitotic figures—prognosis very bad. The child was returned once to the Out-patient Department since discharged and is apparently improved.

Comments.—I have recorded this case on account of :—

(1) the almost complete absence of the usual clinical signs and symptoms of intussusception ;

(2) the absence of other signs of a lympho-sarcoma ;

(3) the rarity of lympho-sarcoma of the small intestine especially in children ;

(4) the rarity of lympho-sarcoma causing a chronic intussusception.

A. M. MACRAE,
Surgical Specialist.

APPENDIX VI.

A Case of Malaria in a European Treated by Atebrin by Mouth and Intramuscularly.

In the third General Report of the Malaria Commission of the League of Nations (Quarterly Bulletin of the Health Organisation Vol. II, No. 2, July, 1933), stress was laid on the value of Atebrin in malignant tertian cases, especially primary.

The following case is therefore of interest :—

27th December, 1933.

Mr. L....., a ship's officer, age 44, consulted me complaining of constant pain in the epigastrium which proved later to be due to a duodenal ulcer. He stated that he had a slight temperature that morning but except for pain which was severe did not feel ill.

His temperature was found to be 103° and he was admitted into hospital the same afternoon. A blood smear (thick film) showed M.T. rings 40 to a field but no crescents. Placed on Atebrin 0.1 gm. thrice daily, per orem.

28th December 6 a.m. T.100.6°.

General condition bad, patient lying on his side hunched up in bed, with flushed and somewhat cyanosed face, foul tongue, weak pulse. He complained of an intense headache at the back of the neck and right side of the occiput. Atebrin per orem as before. 12.p a.m. T.103.4° remaining up during the day. Urine—alb. trace ; granular casts.

29th December, General condition as before.

8 a.m.—Blood showed 35 M.T. rings per field.
10 a.m.—Temperature rose to 104.8°.
11 a.m.—Intramuscular Atebrin 0.1 gm.
4 p.m.—Blood showed 33 rings per field.
6 p.m.—Temperature had dropped to 99.6.
Intramuscular Atebrin 0.1 gm. repeated at 6.30 p.m.
Atebrin per orem as before.

30th December—Better: Tongue clearing. Less headache.

6 a.m.—T. 100.2.
8 a.m.—Blood M.T. rings 18 per field.
2 p.m.—T. 102.
6 p.m.—T. 101.8.
6 p.m.—Intramuscular Atebrin 0.1 gm.
Atebrin per orem as before.

31st December, 6 *a.m.—T.* 98.8.

Condition much improved. Headache almost gone.
Tongue clean. Blood M.T. rings 1 in 5 fields.
2 p.m.—T. 100.
6 p.m.—T. 101.4.
Atebrin per orem as before. No Atebrin by muscle.

1st January, 1934, 6 *a.m.—T.* 98.6.

Feeling well . Headache gone. Sitting up.
2 p.m.—T. 99.
6 p.m.—T. 99.6.

2nd January—Temperature normal.

Blood—clear of parasites.

7th January—Discharged to ship.

Temperature having remained normal since 2nd January.

Comment.—No quinine was used in this case which progressed steadily to recovery. The case is of interest owing to the heavy parasitization and its rapid response to Atebrin alone. The case would indicate the value of resorting to the intramuscular use of Atebrin in heavy and dangerous infections with the malignant form of the parasite.

E. MORRIS FRANKLIN,
Medical Specialist.

APPENDIX VII.

Two Cases of Infection by Plasmodium Ovale seen in Kumasi.

In the latter half of 1933, two patients, who presented themselves for treatment at the African Hospital in Kumasi, were found to be harbouring malarial parasites which, on detailed examination, were found to correspond to P. ovale. They were first reported by the laboratory attendant as "quartan", and the patients had left with supplies of quinine before further blood films could be taken.

The first patient was a man who had never been outside the Gold Coast. The second was a West Indian woman who had lived in Kumasi for over five years.

Blood films taken from the latter case were kindly examined at the London School of Tropical Medicine by Professor J. G. Thompson, who confirmed the diagnosis.

Some red cells containing ring forms exhibited Schüffners dots and were not enlarged. Others shewed band forms resembling those of P. malariæ.

Clinically, both cases were mild and responded well to treatment by quinine.

The cases are mentioned as the parasite appears to be rare in the Gold Coast. Several cases from Nigeria are mentioned by Hamilton Fairley in the *B.M.J.* (July, 1933, p. 101). It is regrettable more material for examination was not obtained; but blood films taken subsequent to quinine therapy were negative.

R. D. REID,
Medical Officer.

APPENDIX VIII.

REPORT ON TUBERCULOSIS AT GOLD COAST HOSPITAL, ACCRA, 1933-34.

As far back as 1926, a conference of Senior Medical Officers of the West African Medical Staff agreed that it was necessary for provision to be made for the treatment of cases of pulmonary tuberculosis.

The need to-day is as great, indeed greater, than it was then. In the general hospital returns over a period of years the numbers appear to remain uniform but I consider that these figures do not give a true picture of the state of affairs.

Below is given a table of all cases of tuberculosis, pulmonary and otherwise, seen in the Gold Coast Hospital during the year 1933-34. These comprise both in-patients and out-patients.

From these cases there has been extracted 100 cases of pulmonary tuberculosis in all of whom the tubercle bacillus was demonstrated in the sputum. In this group it may be of significance that only 62 per cent of these are from the Gold Coast Colony proper and that over a third 38 per cent are from areas outside the Colony proper.

It will be seen that the actual death-rate of the in-patient group is 53.6 per cent with an average stay in hospital for the group of 39 days.

The average duration of treatment of the selected group of tuberculous out-patients was 35 days and the death-rate 41.3 per cent. The death-rate of the out-patient group is naturally not an exact figure as patients attend to drift away to their home towns or to fetish medicine-men as soon as they find they are not improving. As instance of the active widespread dissemination of disease by individuals, of the out-patient seen one returned to Togoland, two to the Northern Territories, one to Ada, one to Keta, one to Cape Coast, and one to Kumasi; all these were actively infective.

The figures for the in-patient group certainly prove that these cases of pulmonary tuberculosis do not come for institutional treatment until it is too late to hope to arrest the disease. In nearly all the actively infective in-patient cases both lungs were involved and several had recurrent hæmoptysis. This meant that all these cases had before admission been scattering abroad tubercle bacilli wherever they went. It has been stated in a previous annual report that the spread of tuberculosis infection is limited by conditions of climate, sunlight, etc., but the fact remains that pulmonary tuberculosis is more than maintaining its hold on the population and that it is for the African especially for the Northern Territory tribesman, a rapidly fatal disease.

The general African public is still very ill-informed of the dangers of the disease and the tables attached to this report show how necessary it still is for local authorities, municipal bodies, etc., to do all they can in the way of propaganda posters, etc., in the vernacular to point out the dangers of tuberculosis.

A. M. MACRAE,
Resident Medical Officer.

TUBERCULOSIS TABLE.

	Out-Patients.			In-Patients.			Totals.	
	Male.	Female.	Deaths.	Male.	Female.	Deaths.	Cases.	Deaths.
Pulmonary	112	19	14	102	7	47	240	61
Intestinal	2	—	—	2	1	1	5	1
Meningeal	—	—	—	—	1	1	1	1
Spinal caries	13	1	—	4	1	—	19	—
Bones and joints ...	2	1	—	6	—	—	9	—
Lymphatic	—	—	—	16	2	—	18	—
Genito-urinary... ...	—	—	—	1	—	—	1	—
Other organs	—	—	—	1	—	—	1	—
	129	21	14	132	12	49	294	63

Total Out-patients ... 150 In-patients 144 Deaths 63

Analysis of 100 Active Cases with B. Tuberculosis in Sputum.

A.—Period of Treatment :

In-patient... 71 { Male ... ... 66 / Female ... 5 } Total days under in-patient treatment 2,756. Average stay in hospital 39 days.

Out-patient 29 { Male ... ... 27 / Female ... 2 } Total days under out-patient treatment 947. Average period under treatment 35 days.

Progress.

	Cure.	Much Improved.	Improved.	Not Improved.	Died.
In-patients	—	1	14	19	37
Out-patients	—	—	—	17	12
Total	—	1	14	36	49

A. M. MACRAE,
Resident Medical Officer.

N.B.—The shortness of the period of observation in the case of out-patients and the impossibility of following- up cases which have ceased attending should be borne in mind in considering the statistics given above.

APPENDIX IX.

Trypanosomiasis in the Gold Coast (with Special Reference to 1933-34).

Past History.

Sleeping sickness has been known to exist in West Africa from early times and it is stated that slave traders operating in the seventeenth and eighteenth centuries made use of the prominent enlargement of the cervical glands as a rough and ready method for recognising and rejecting slaves infected with the disease.

Emphasis was laid on the importance of this enlargement as a sign of the disease by Winterbottom in describing sleeping sickness in 1803.

It will be recalled that the parasite causing the disease in man was found by Forde as recently as 1901 and recognised by Dutton as a trypanosome in the following year. About the same time the identity of the trypanosome in the blood and that found in the central nervous system was established by Castellani.

Bruce and Nabarro in 1903 were the first to prove that G. palpalis was the vector of T. gambiense.

In the same year a sleeping sickness camp was established by the German Imperial Government in Togoland where the disease was found to be widespread. History relates that all the cases admitted to the camp died.

In 1908 a second camp was formed on the Kluto plateau in Togoland and some 593 cases were dealt with there during the next five years.

The main focus of infection was believed to be in the neighbourhood of Misahoe and the area stretching as far as Sansane-Mango. Approximately, 6 per centum of the population of this area were found to be attacked.

It will be recalled that it was in 1908 that Laveran and his co-workers first enunciated the theory of chemical prophylaxis by sterilizing the peripheral blood with drugs.

In 1909, Horn carried out a careful investigation in the Volta River District of the Gold Coast and concluded that the disease was endemic in this region.

Kinghorn, specially appointed for the purpose, undertook a survey in the Western Province of Ashanti in 1910.

This observer examined 16,634 persons out of a population of between 60,000 and 80,000 and found 97 or 0.6 per centum carrying trypanosomes.

He was of opinion that the disease was " apparently of considerable antiquity in the country and appeared to exist in a chronic form " which would appear to be a denial of the statement sometimes made that the disease did not exist in Ashanti until the Samori raids of 1897-1898.

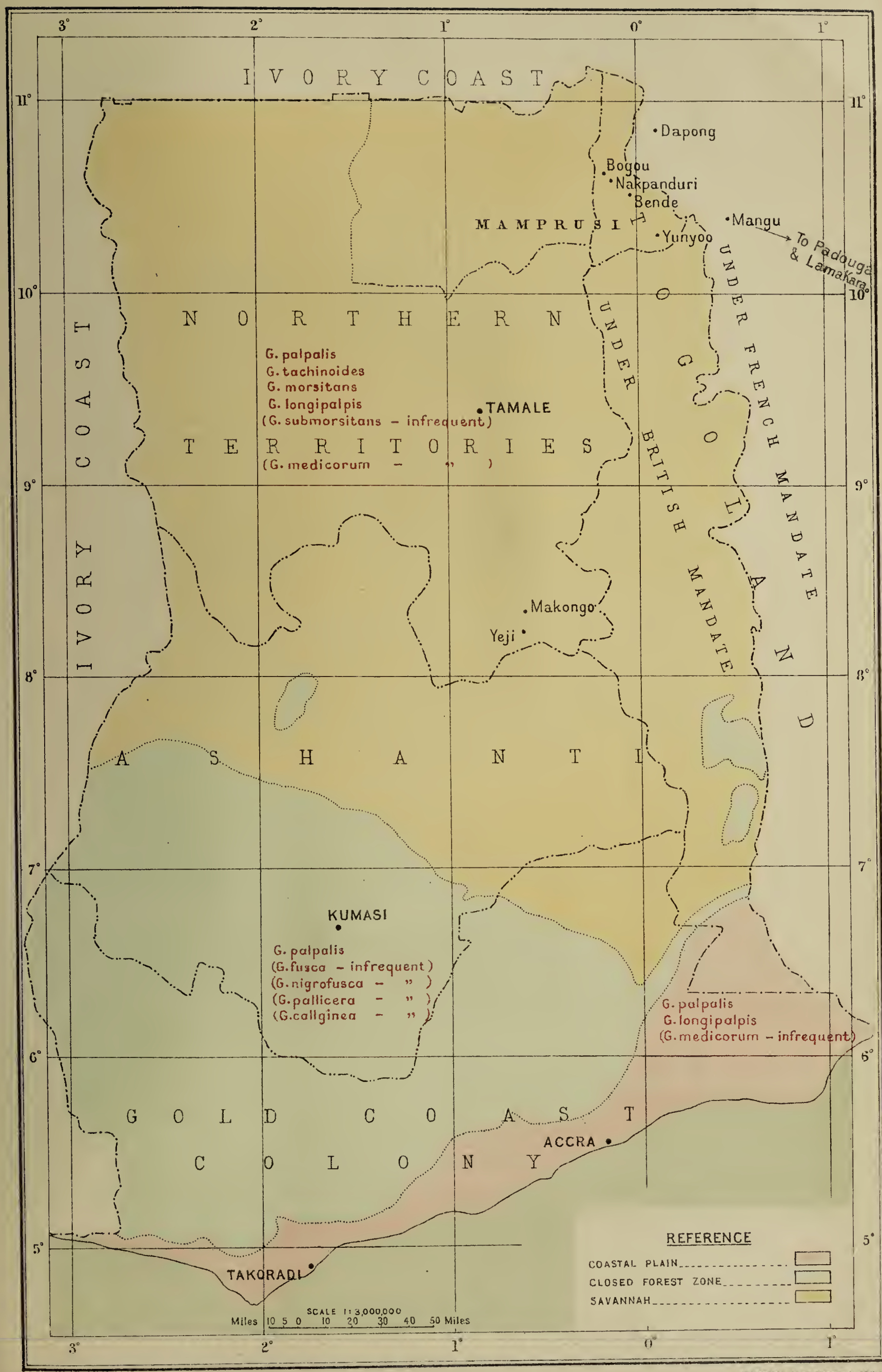
The year 1911 marked an agreement between His Majesty's Government and the Imperial German Government for the two Governments to co-operate in sleeping sickness measures on both sides of the frontier.

The agreement was undoubtedly a happy gesture but it was not of great practical value and lapsed on the outbreak of war.

Wade and others of the West African Medical Staff carried out careful surveys in various parts of the Gold Coast and its dependencies during the years 1910-1913.

In Ashanti 39,742 persons in 196 different towns and villages were inspected by Wade.

Of these 110 cases or 0.3 per centum were found to be infected. He expressed the opinion that "the disease follows the main trade routes and traffic, and that residents becoming infected in their villages on the main roads act as reservoirs for disseminating the disease to susceptible persons in the neighbouring villages."



SURVEY H.Q. ACCRA. 1934.

The incidence of the disease in the Gold Coast and its Dependencies during the past decade is shown below :—

Year.	*Cases.*	*Deaths.*	*Incidence per 10,000 of all cases treated.*
1924–25	26	—	3.2
1925–26	37	5	3.8
1926–27	67	11	6.4
1927–28	59	4	4.4
1928–29	94	18	5.3
1929–30	121	23	6.6
1930–31	224	16	10.5
1931–32	250	28	12.6
1932–33	685	45	33.1
1933–34	1,179	77	56.1

It must be remembered that a considerable amount of attention has been paid to the problem of human trypanosomiasis in the Gold Coast in the past few years and that officers have been specially detailed to make surveys of the incidence of the disease. The very marked increase in the number of cases reported cannot therefore be attributed entirely to the occurrence of localised epidemics.

In this connexion, it might be desirable to refer to the apparent increase of over 100 per cent in the number of cases of leprosy recorded in the Annual Medical and Sanitary Report for 1928-29 over that of the previous year. The period covered by the report in question happened to coincide with the appointment of a leprosy medical officer by the British Empire Leprosy Relief Association.

Since the abolition of that special post leprosy has diminished, on paper, to a very considerable extent. Before the appointment (1927-28) the number of cases of leprosy treated was 668, this rose to 1,427 in 1928-29 and to 3,224 in 1930-31. The leprosy medical officer resigned at the end of 1931 and the figure for 1933-34 has fallen to 1,494.

It is particularly desirable to emphasise that there is no desire to minimise the danger to the Colony of trypanosomiasis.

At the same time it is necessary, espccially in times of reduction in staff and funds, to obviate the temptation to divert large sums of money and much time and energy to a disease which is of far less vital economic importance to the inhabitants and far less easy or certain to prevent and cure than, say, malaria.

Distribution.

It is interesting to compare the number of cases dealt with within the main zones in the Colony and its dependencies. Infection is rare in the coastal zone and the incidence of cases of sleeping sickness in 1933-34 was in the ratio of 7.1 per ten thousand patients treated.

In the forest belt the ratio showed an increase to 84.6 per ten thousand patients treated, whilst the incidence in the savannah belt was in the ratio of 87.3 per ten thousand. It would be as well to recall the fact that there is some evidence to suggest that in both coastal and forest cases a certain proportion of the sufferers are immigrants from endemic or epidemic areas in the Northern Territories of the Gold Coast or from neighbouring French territory.

The existence of several important foci of the disease in French territory is clearly seen by reference to the report on " Transmissible Diseases seen in the French Colonies and Mandated Territories in 1931."

According to this report sleeping sickness is very prevalent in the Upper Volta to the north-west of the Northern Territory Protectorate. Here 5,796 and 1,689 new cases were found during the year in the Koudougou and Gaoua districts respectively. The report states, furthermore, that 1,507 persons were found to be infected amongst 60,263 examined (2.2 per centum) in Northern Togoland under French Mandate.

There is little doubt that the Northern Territories and neighbouring regions are responsible for the bulk of the cases met with ; for even in the Sunyani-Kintampo district of Ashanti where infection not uncommonly occurs, many of the patients seen are from the Protectorate or beyond and may have been infected there.

Investigations carried out during the past few years give grounds for the belief that the most heavily infected area in the Gold Coast is to be found in the north of the Northern Section of Togoland under British mandate (hereafter called Mamprusi under Mandate) and that the beginning of the present outbreak of the disease there dates back to 1929-30.

The French have been pursing investigations in the corresponding sector of Togoland under French Mandate during the last few years. To give but one example, at Dokpoing in the Mango Province between Bogou and the frontier of British and French territory in Northern Togoland, some 87 per cent of persons found with enlarged glands proved to have the parasite in gland juice.

French investigators in the same area have during the past few years discovered a hyperendemic zone in the region of Pagouda-Lama-Kara-Koumea.

The population of this region is given as 160,000 and 10,000 or one-quarter of the 40,000 examined have been found to be suffering from trypanosomiasis.

On the British side the population of the corresponding zone is estimated to be just under 15,000 so that the problem is a much smaller one. The routine adopted by our French colleagues is to give six injections of Atozyl to suspected cases and two courses of twelve injections of Tryparsamide in a year for four years to proved cases. At the end of the period of four years patients have an examination made of their cerebro-spinal fluid and are discharged if negative, returning for examination once yearly. This involves a very large organisation including a fixed hospital at Pagouda and a bush dispensary in each canton. The cost of this anti-trypanosomiasis service is stated to be one million francs per annum (£13,000 at current rates of exchange).

It is proposed first to deal with the Mamprusi region of the Northern Territories including that under mandate which lies on the north-east corner of the Protectorate.

The population of the northern portion of Mamprusi (old Kusasi) at the census of 1931 was estimated as nearly 158,000 whilst that of the southern portion (old Gambaga) was estimated at rather over 46,000 and the part under mandate just under 15,000.

There would appear to be some difference of opinion as to whether trypanosomiasis has existed for centuries in these regions or if it is of recent origin. On the one hand a chief of Northern Mamprusi recalls his father having spoken of the disease thirty years ago. On the other hand the B'moba word yeragwan (yera = sleep, gwan = sick) is stated to have been used first in 1929 by the people of Nakpanduri in neighbouring mandated territory to describe a sickness of which they had been ignorant hitherto but which assumed epidemic proportions there in 1932.

The people of Bende in the same region are alleged to have noticed the disease for the first time in 1929. As Dr. Purcell who was responsible for the greater part of the investigations points out, however, negative evidence of the existence of a disease is of very little value in the African of the Protectorate.

Topography.

In Northern Mamprusi conditions are less favourable to presence of tsetse. The waterways are restricted mainly to the Red and White Volta and Tamme rivers whilst there is a tendency for the population to live in large villages.

In Southern Mamprusi and more particularly in that portion under mandate, on the other hand, there are very many small waterways which dry up in the dry season, except for pools along their courses, and the population is scattered amongst numberless small farms. The " bush " is chiefly of the open savannah type.

Vector.

G. palpalis is the principal vector of T. gambiense but G. tachinoides, which is said to be a dangerous carrier in Nigeria, cannot be altogether excluded as a factor and Dr. Batchelor, who was in charge of a survey in the year under review, is satisfied that this second type is able to breed under tall trees in Southern Mamprusi and in mandated territory.

It will be remembered that other species of tsetse have been described as being prevalent in this country, e.g., G. longipalpis, G. morsitans, G. submorsitans, G. medicorum (rare). G. palpalis was found near fords and river crossings, at pools and water-holes in the courses of dried-up rivers and along the banks of rivers.

The fly appears to increase in density towards the end of the rains, that is to say in September.

It will be recalled that Dr. Saunders and Mr. Morris found G. palpalis in a like habitat in the forest belt in Ashanti, G. longipalpis in secondary bush surrounding the forest, G. tachinoides near various streams in the savannah of the north and G. morsitans and G. submorsitans in a few places throughout the bush.

Other forest belt species of tsetse described by Messrs. Pomeroy and Morris include G. caliginea, G. fusca, G. nigrofusca and G. pallicera, but these are of very small importance compared to G. palpalis which is the preponderating species in forest country.

Summary of work during 1933-34.

In April, 1933, Dr. McKernan, medical officer, and the district commissioner, Bawku, proceeded to Mango and Pagouda at the invitation of the Commissioner of the Republic, French Togoland, to discuss the problem of trypanosomiasis.

About the same time Dr. McKernan examined 300 persons in Bende, Nakpanduri and Yunyoo in the hyper-endemic area of Mamprusi under mandate and found the infection rate (judged by examination of gland juice only) to vary from 18 per cent to 12 per cent and 7 per cent in the three towns respectively, the average being 11 per cent for the population of just under 15,000.

In August and September, 1933, Dr. Purcell, medical officer, Bawku, carried out a rather more detailed survey over a larger area.

He found little evidence of the disease in the eastern and central parts of Northern Mamprusi, such cases as were seen being traceable to mandated territory. In one instance 752 persons were examined but none were found infected.

In the northern part of Northern Mamprusi the ratio of persons suspected to be suffering from the disease was 1.5 per cent and the diagnosis was only confirmed in 0.34 per cent.

Trypanosomiasis was found scattered somewhat scantily through the Southern Mamprusi District except as described below. Out of a population of 12,000 as many as 4,500 were medically examined but only 48 or just 1 per cent of those suspected to be suffering were positive.

In the mandated territory forming a portion of the new Southern Mamprusi District the disease appeared to be hyper-endemic.

By various methods of examination 4 per cent were found to be infected.

Dr. Purcell proffers the opinion that 5 per cent of gland and 10 per cent of blood infection exists in the hyper-endemic area but there is hardly justification for such generalisation up to the present.

Towards the end of 1933 a temporary field hospital was established at Nakpanduri as being the centre of the hyper-endemic area.

Early in 1934, Government agreed to an expenditure of £40 to convert the field hospital into an all-weather one and the Governor approved provision in the Estimates for the following year of funds for maintenance and to provide a certain amount of trained supervision in connexion with clearings.

Dr. Batchelor was responsible for the construction of this simple field hospital at very little cost to Government and with the help of Lt.-Colonel Gibbs, the district commissioner.

For the last three months of 1933-34, 250 patients were treated in this camp divided into 96 females and 154 males, a ratio of 100 females to 160 males.

The age groups were as follows :—

Age	... 0-5 years	5-10 years	10-20 years	20-40 years	40 and over.
No. sick ...	2	40	100	100	8

Diagnosis was based upon examination of glance juice, blood smears and lumbar punctures.

In this connexion it is noteworthy that gland puncture proved the surest means ; in fact gland juice contained the parasite in 85 per cent of positive cases of the disease which had come into the camp with a self-made diagnosis.

Signs included a smooth face (owing partly, at least, to œdema) with a dull, morose and fixed look. The associated cervical adenitis has already been referred to. In addition, marked trembling, hemiplegia and incontinence were noted at a later stage.

Headache, general pains, excessive sleeping, itching of the skin, asthenia, wasting, pain and swelling of neck were amongst the commoner symptons complained of by the sufferer.

As regards treatment, Dr. Batchelor made a habit of giving first intramuscular and later intravenous Tryparsamide. Adults with mild and medium infections received a course of three gm. 1 doses of Bayer 205 on the first, third and sixth day followed by seven weekly doses of gm. 3. Severe cases with invasion of the central nervous system were given eight 3 gm. doses of intramuscular Tryparsamide. A very real difficulty was experienced in inducing patients to remain under treatment for the required number of injections and not to leave after one or two and be a danger to the community as carriers of an arsenic-fast parasite.

Dr. Johnson, at one time head of the Nigerian Trypanosomiasis Commission, was one of the first to point out this difficulty and to recommend compulsory treatment.

Prevention.—Prevention has followed two main lines.

Firstly, with the valued co-operation of the Administration efforts have been made to render conditions in the areas affected less favourable for the breeding of tsetse by means of clearings. Here it should be recorded that the French Authorities carry out no clearings at all.

The laws current in the Protectorate provide for a clearing of thirty yards along banks of steams adjoining the water supply and for crops not to be grown within one hundred yards of houses in villages.

In Ashanti there is no definition of the size of the area to be cleared but it is laid down that clearings fifty yards in extent should be maintained round villages.

In the Colony proper, apart from various villages under the Towns Ordinance or Criminal Code, there is no legislation governing clearing round villages or water-holes.

It wil be recalled that as the result of their invstigations at Makongo and Yegi in the southern portion of the Protectorate, Dr. Saunders and Mr. Morris advised a clearing of a minimum of fifty yards (preferably one hundred yards) on each side of a water hole.

They added two riders to their recommendations.

> " I.—The work of clearing should involve the complete removal of all vegetation. Such clearing is not only far more effective in the exclusion of tsetse, but the growth of vegetation is hampered by the drying of the ground on the removal of all shade.

" II.—Farming of the cleared areas with low-growing crops should always be undertaken. Ground-nuts and by far the most suitable crop, as they can be grown on the same land for a number of years; most other crops can only be grown for two or three years; after which the ground becomes stale. Corn is unsuitable as it is inclined to encourage small game such as duiker, which in turn attract tsetse.

Subsequent extension of the clearing by farming should always be aimed at, but the farmed areas should be as continuous as possible, as isolated farms of any nature in the bush are apt to attract game."

They were further of the opinion that " ferries and all big river-road crossings should be cleared for at least a quarter of a mile on each side."

In the campaign in Mamprusi including that portion under British mandate six boys were trained to supervise cleanings marked out by the medical officer. The district commissioner explained the need to the chiefs who gave the order to their subjects to do the necessary work. (This procedure is in accordance with the Forced Labour Convention and the use of labour on minor communal services benefiting the people as a whole).

As far as possible the area round all water-holes in the territory affected was cleared for a distance of fifty yards. Further clearings were made for one hundred yards on either side of main road crossings over streams and for fifty yards round villages.

Dr. Batchelor expressed the opinion that the clearing should be complete because G. palpalis will fly at least one hundred and fifty yards in search of food and, as it dislikes sunshine and prefers shade, all high shade trees should be felled. In addition, this observer had good grounds for believing that tsetse could breed under shade trees in the region under discussion.

It is considered a highly creditable record that, with the support of Government, over 90 per cent of the villages mentioned in the census report of 1931 in the Mamprusi region were located and cleared before the beginning of the rainy season of 1934-35.

These clearings often involved much persuasion by officers of the Administration and not infrequently a great deal of delay in the carrying out of requests by the chiefs concerned. This is not altogether to be wondered at for the greater portion of the inhabitants of the Northern Territories are illiterote and have scant belief in measures designed for their health and comfort.

Anti-trypanosomiasis work elsewhere in the Colony and its dependencies consisted for the most part of the treatment of sufferers. Sunyani is an exception to this for here a series of experiments were undertaken by the medical officer in connexion with the trapping of tsetse. The Swynnerton trap and a modification were used but were later displaced by one devised by Dr. MacPherson and his staff.

The deputy director of health service records the opinion that trapping is a useful method in circumscribed areas, for example, round water points, but that it is never likely to be an important factor in reducing appreciably the number of flies over a wide area.

The number of cases of trypanosomiasis treated in various representative hospitals scattered throughout the Gold Coast five years ago and during the year under review gives food for serious thought.

Hospital	No. of cases treated.		No. of deaths.		Incidence per 10,000 of all causes.	
	1928–29.	1933–34.	1928–29.	1933–34.	1928–29.	1933–34.
Accra	7	38	2	2	3.7	9.8
Kumasi	26	363	5	29	11.8	258.1
Sunyani	1	73	1	13	10.3	99.6
Tamale	1	101	0	6	1.1	48.3

Summary.

(*a*) Writing in 1928, Dr. Saunders and Mr. Morris stated : " We are not of the opinion that trypanosomiasis in the Gold Coast constitutes a serious or immediate danger to the stability or economic condition of the people. . . .

" We are however, of the opinion that trypanosomiasis constitutes a continual drain of death and ill-health ; and also that there is a potential danger of extension, if the development of the country were to progress in such a way as to expose large numbers of people to the fly."

This statement still holds good and care should be taken to maintain a proper balance when considering the apparent forty-five-fold rise in the case incidence of trypanosomiasis in the past 10 years. At the same time the presence of considerable numbers of persons in the Colony carrying the trypanosome in their blood-stream must give rise to no little concern and calls for a determined effort to limit infection as far as possible.

(*b*) It is not possible to indicate to what extent the apparent increase has resulted from (i) focussing attention in recent years on the disease, (ii) detailing officers whose principal duty has been to search for cases and, lastly, (iii) the unabated immigration from French territory—part of which is known to be heavily infected—of labourers many of whom have contributed to the numerous cases of death from the disease recorded during the year. The majority of cases seen are adult males of whom a large proportion are immigrants.

(*c*) Investigations suggest that the northern portion of Togoland under British mandate (Mamprusi under mandate) is a hypher-endemic area with an infection rate in the neighbourhood of 11 per cent.

(*d*) The Sunyani District of the Western Province of the Colony of Ashanti is another region where the infection is known to have existed for many years. Cases have also been reported where infection was believed to have occurred on the outskirts of Kumasi in the centre of forest belt of Ashanti.

(*e*) Cases occurring in the coastal belt of the Colony proper are believed to be to a very large extent imported.

(*f*) G. palpalis is the principal vector although there is a possibility of G. tachinoides being of some importance in the Protectorate.

(*g*) A combination of Bayer and Trypasamide appears to give the most satisfactory results.

The danger of a patient who only submits to one or two injections and then ceases to attend for treatment and thus becomes a potential carrier of an arsenic-fast strain is a very real one and efforts were made to induce cases to remain for a course of at least seven injections. Blood sterilisation is expensive and does not prevent a second infection if a patient, after being cured, returns to the place where he was infected—nothing having been done in the meanwhile to abolish or diminish the breeding of tsetse.

(*h*) A hospital camp with trained staff has been established at Nakpanduri (Mamprusi under mandate) for the treatment of cases in that hyper-endemic area.

(*i*) The need for clearing and its annual maintenance is emphasised.

The consensus of opinion favours clearings for fifty (preferably one hundred yards) round water-holes or along the banks of rivers where water is drawn, one hundred (preferably one hundred and fifty) yards on either side of main road crossings on rivers or fords, and a quarter of a mile on either side of ferries.

Clearings of fifty yards round villages possess a definite value. Dr. Batchelor states that all trees should be felled within the limits of the cleared area for the clearing to be really effective. The Governor, in promising that the Medical Department should receive the fullest support and co-operation from the Political officers, ruled that large trees were not to be felled at present, that a clearing of fifty yards to be extended ultimately to one hundred yards was to be made round villages, principal water-holes and fords or river crossings, and that cattle kraals (since cattle attracted flies) should be kept outside instead of in the middle of villages.

Recommendations.

(*a*) A careful watch should be kept on the incidence of the disease, and investigations directed towards the discovery and, if possible, eradication of hyper-endemic foci should continue to be pursued.

Clearance of forest for farms in the forest belt must, inevitably, render this area more liable to invasion by tsetse.

Conditions in neighbouring French territory tend to encourage immigration into the Gold Coast of possibly infective labourers. The effects of this combination might have serious consequences—hence the need both for vigilance and for anti-tsetse measures, particularly clearing.

(*b*) Clearings should be maintained from year to year in the affected areas and should be extended as far as staff—both technical and administrative—permits.

(*c*) The special vote inserted in the current Estimates for anti-trypanosomiasis activities should be regarded as an annually recurrent one.

(*d*) Whilst the advisability of definite, planned anti-trypanosomiasis operations is undoubtedly a matter that allows of no argument, care must be exercised to ensure that large sums of money and numbers of personnel are not diverted from being used to deal with other vital medical and health problems of equal or much greater importance.

(*e*) Finally, the importance of close co-operation between administrative and medical officers cannot be stressed too strongly and the success of an anti-trypanosomiasis campaign must depend upon the whole-hearted support by the Administration for such measures as may be advised by the technical officers.

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